INTEGRAL UNIVERSITY
LUCKNOW (INDIA)

e-Souvenir

INTERNATIONAL E-SYMPOSIUM

ON

" RECENT ADVANCEMENTS IN INFORMATION AND COMMUNICATION TECHNOLOGY "

(RAICT 2020)

5TH - 7TH NOVEMBER, 2020

ORGANIZED BY

DEPARTMENT OF COMPUTER APPLICATION

INTEGRAL UNIVERSITY, LUCKNOW

DASAULI, KURSI ROAD, LUCKNOW 226026

IEEE
Integral University IEEE Student Branch
Branch Code: STB17471
School Code: 60027114

226026/IUL/EC

INSPIRING EXCELLENCE

ABOUT THE UNIVERSITY

Integral University is situated in Lucknow, a city known for its culture, etiquette, monuments and role in the freedom struggle. Lucknow is the capital city of the largest state of India, and has a population of about 4.6 million. Lucknow is the capital city of Uttar Pradesh and it has always been a mulcultural city. Integral University has a unique culture of inclusiveness, diversity, personal and intellectual integrity and value-based education.

Integral University, a seat of educational excellence, is a premier university in Lucknow, It was established under the Act Number 9 of 2004 by the State Government. The curriculum has a strong focus on individual growth and the development of essential tools so that its students make a mark in the corporate world and the field of technology. These are solidly supported by a highly qualified and trained team of accomplished faculty and robust academic infrastructure. It was established under the Act Number 9 of 2004 by the State Government. The University is duly approved by the University Grants Commission (UGC) under sections 2(f) and 12B of the UGC Act, 1956, Medical Council of India, Pharmacy Council of India, Indian Nursing Council, Council of Architecture, Bar Council of India, Indian Association of Physiotherapists, National Council for Teacher Education, UP State Medical Faculty and Distance Education Bureau. The University maintains a decent and decorous atmosphere in the campus. The campus is highly disciplined and ragging-free, with all modern amenities for pursuit of higher education and sports. The campus provides state-off the-art hostel accommodation, with the capacity to host 2600 students in the hostels, and houses a 550-bedded hospital, as part of the Medical College, with state-of-the-art medical facilities and more than 200 doctors. Integral University is not only an academic institution but also a mission and a vision to make the country progressive and prosperous in all walks of life.

ABOUT THE DEPARTMENT

Department of Computer Application was established in 2003 and is one of the most reputed academic departments in the field of Computer Application. The Department aims to make a place at both national and international level by producing high quality ethically rich computer application engineers conversant with the state-of-art technology and with the ability to adapt the upcoming challenges in information technologies and their applications to cater to the ever changing industrial and societal needs. It is committed to provide a supportive, friendly and challenging learning and research environment. The department provides a stimulating academic environment that amalgamates the best of conventional and modern pedagogy, rich and industry relevant curriculum, through extremely competent faculty staff and intensive teaching-learning process and continuous evaluation system.

Department of Computer Application emphasizes on the latest programming languages, cutting edge technologies and tools to make the students ready for IT industry. The department aims to become a center of excellence in providing in-depth technical knowledge and opportunities for innovation and research with the state-of-art computer facilities and is to produce versatile students making them ready to be employed and capable of disciplinary collaboration in industry/government sector/higher education/research and development/entrepreneurship.

The Department offers a 6 semester Bachelor program in Computer Application (BCA), 6 semester Master program in Computer Application, and Doctor of Philosophy program. The combination of a dynamic and innovative curriculum that takes advantage of the latest technologies, with the experienced faculties of the Department, creates a fertile ground for the effective dissemination of knowledge and the development of the necessary skills for future professional recognition of the Department's students.

ABOUT RAICT 2020

The International Symposium RAICT-2020 organized through virtual mode for the betterment and safety of academicians, professionals, industry and technical aspiring community in this current challenging scenario of COVID-19 pandemic. The inspiring environment of electronic teaching and learning process motivated the Department of Computer Application to bring together innovative academicians, industrial experts and research centric students in the field of Information Technology, Computational Engineering and Computer Science on public forum which will promote exchanging and sharing of scientific innovations and information globally.

The Symposium highlights are:

- International and national renowned speakers.
- Quality abstract received from corporate and academia.
- Abstracts reviewed by technical review committee.

There are six tracks included in the Symposium, as follows:

- **Track 1:** Cyber Security, Information Security and Forensic Science
- **Track 2:** Computer Vision and Image Processing
- **Track 3:** Distributed and Collaborative Software Engineering
- **Track 4:** Data Science, Machine Learning, Internet of Things (IoT) and Cloud Computing
- **Track 5:** Blockchain Technology
- **Track 6:** ICT Role in COVID-19 Pandemic.

We have received more than 200 abstracts, out of which only 117 quality abstracts have been accepted for Virtual oral presentation.

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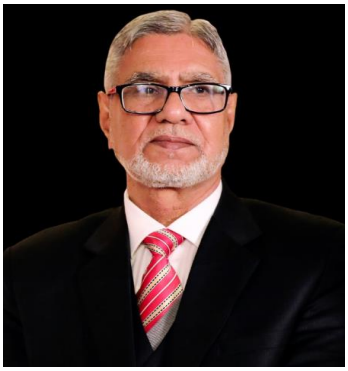

Message

With the global pandemic, COVID 19 still affecting the lives of millions of people, secondary and higher education has emerged as one of the most affected areas. The pandemic has led to the near-total closure of schools, universities, and colleges. In these changing times, the Digital India initiative has given a better pathway for the online teaching and learning process.

Online teaching is committed to delivering quality education which accomplishes all aspects of knowledge encompassing theoretical and experimental notions, fieldwork, and extra-curricular activities like conference, seminar, symposium, and workshop. We at Integral University are not only committed to giving quality teaching and learning opportunities to our students, faculty members, but also to all our peer institutions at the national as well as international level.

To convey the knowledge and recent advancement in Information and Communication Technology, the Department of Computer Application, Integral University is providing a common forum by organizing an International E-Symposium on Recent Advancements in Information and Communication Technology. This symposium is for researchers, practicing engineers, and academicians to share their views and experiences from 5th to 7th November 2020.

It is very heartening to note that several technical notes have been received from different academicians, industry people, and researchers belonging to different National and International institutions and industries for inclusion in International Symposium souvenir which will help spread the knowledge of communication and information technology among the technical aspirants. It is also a matter of pleasure that this International Symposium consists of a plethora of renowned speakers and experts.

I extend my warm welcome to all invited experts and participants and expect that the participants will enhance their knowledge by listening to them.

I wish and bless the organizing team for the grand success of the International Symposium.

Prof S.W. Akhtar
Founder & Chancellor

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Message

Information and Communication Technology advancement regularly strides towards new dimensions. This has introduced a vast digital platform for performing online activities. The Government of India has initiated the Digital India Programme with the sturdy maxim 'Power to Empower,' having three core components of digital infrastructure creation, digital delivery of services, and digital literacy to accomplish the synchronized implementation of citizen centric Government schemes and policies. Among the nine pillars of Digital India Initiative, E-Governance plays a vital role in the theme of easy, effective and economic governance which shall make the Nation more self-reliant through the delivery of outcome-based services to citizens and businesses.

To obtain better advantage from Information and Communication Technology, another initiative named 'National Mission on Education through Information and Communication Technology' (NMEICT) incorporating SWAYAM, National Digital Library and Spoken Tutorial, etc. were launched. This has helped in the development of high-quality knowledge-centric content that has been made available to numerous learners gratis.

Information and Communication Technology serves as the pathway for New India to achieve the best possible economic, social, cultural, and environmental growth. To encourage awareness among academicians, researchers and technical aspirants for giving these initiatives increased popularity, the Department of Computer Application is organizing an International Symposium on "Recent Advancements in Information and Communication Technology" from 5th -7th November 2020.

My best wishes and blessings to the organizing committee who have invested efforts in the organization of the program.

Dr. Syed Nadeem Akhtar
Pro Chancellor

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Message

It is a matter of great pleasure that Department of Computer Application, Integral University, Lucknow is organizing an International Symposium on "Recent Advancements in Communication and Information Technology", between 05th to 07th Nov, 2020.

Whether we are aware of it or not, we are surrounded by networks through which information flows constantly. Our notions of time and location are changing – the world seems to have become a 'global village' where distance is no longer a barrier to commercial or social contact. Technology is indispensable in our work-lives, and it pervades every aspect of businesses and the public space. Modern technology has changed our lives in countless ways – revolutionizing how we work, live, and play.

IT technology in India is advancing at an alarmingly fast rate, and those who can't keep up are simply left behind. There's no doubt that the IT industry is growing like never before. With the rapid growth of IT sector, the biggest challenge coming before research community and policymakers is, designing the frame work for fort knoxing our digital platforms.

I hope that the outcome of this Symposium will cover all of these aspects and shall prepare a roadmap for successful implementation of sustainable and accessible infrastructure of ICT, which shall work in a better way for the current socio-economic environment.

I wish this Symposium a grand success.

Prof. Aqil Ahmad
Vice-Chancellor

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Message

The adverse effects of virus prone environment on academic activities mitigated through digital platform in a smoother manner. At the same time, it became the need of current scenario that people should come forward to learn the emerging trends in Communication and Information Technology and its allied key tools together with its possible challenges and issues.

To deal with the same and to attain this objective the Department of Computer Application, Integral University is organizing an International Symposium on virtual platform titled, Recent Advancements in Information and Communication Technology" on 5th, 6th and 7th November 2020, wherein eminent experts, academicians and distinguished technocrats of the subject will grace the occasion.

I congratulate the Organizing Chair, Conveners, Organizing Secretary and Organizing Committee and wish that this International Symposium may accomplish its goal at its highest level of quality and significance.

Prof. (Dr.) I. A. Khan
Registrar

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Message

Information and Communication Technology is becoming a powerful catalyst for Socio-economic development. The appropriate practice of ICT creates a conducive environment for knowledge and information flow to every level of society and thus enriching business activities. The usage of ICT is still at the very early stage of harnessing its potential to generate greater prosperity by connecting our continent to global networks of business, knowledge and productivity.

It is a great moment of pleasure that the Department of Computer Application is organising an International Symposium on "**Recent Advancements in Information and Communication Technology**" on virtual mode from November 5-7, 2020 and publishing an E-Souvenir to put a notable mark for this occasion. I am sure this three-day International Symposium will create an opportunity though virtually for the participants to learn from eminent academicians and researchers the advancements done in the area of Information and Communication Technology.

I wish the entire organizing committee all the best for the grand success of this conference

Prof Abdul Rahman Khan
Controller of Examination

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Message

It gives an immense pleasure to know that the Department of Computer Application is organizing an International Symposium on "Recent Advancements in Information and Communication Technology" on 5th, 6th and 7th November 2020.

Currently we are living in an environment of new India having strong foundation of digital and telecommunication arena. The latest drifts of Information and Communication Technology are the biggest supportive approach to the economic growth and development in the field of education, infrastructure, business, husbandry, manufacturing and health. Information and Communication Technology also develop an important pathway to sustainable and progressive mindset, community centric growth, academic and research advancement.

This International Symposium is extremely pertinent to the digitalization due its online nature. I wish that this International Symposium will provide a first-rate platform for the technical aspirants as well as faculty members to uplift their-selves in the field of Information and Communication Technology.

Prof. (Dr.) Mohd. Haris Siddiqui
Director,
Admission & Academics

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Message

The field of Information and communication technology has a strong sense to cultivate the academic community. It plays a vital role in providing the qualitative digital infrastructure to achieve socio-economic growth and technological advancement and enables financial inclusion through e-commerce, m-commerce and social networking which allows people to connect with the latest ICT tools. Information and communication technology and its advancement is committed to offer enhanced functionality in the fields of health and medicine, entertainment, education, marketing and advertisement, law enforcement and many more.

Information and communication technology are applicable among the government and private division functions, educational activities, industrial as well as social and economic sectors while aspiring the zealous researchers and scientists as well as industry persons to pull out some significant and innovative outcomes. Keeping such vast goal of technological awareness for the betterment of the society the Department of Computer Application is organizing an International Symposium on "Recent Advancements in Information and Communication Technology" on 5th, 6th and 7th November 2020.

I congratulate the organisers of RAICT-2020 for organising such a meaningful symposium. I firmly believe its success and wish this International Symposium to draw a high-end qualitative mark on the horizon of educational society.

Prof Syed Aqeel Ahmad
Director
Human Resource Development Centre

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Message

Information and Communication Technology provides technical as well as non-technical individuals and organizations, a digital platform for various types of online activities. It develops an innovative way of thinking to get interacted with electronic form of data, information and knowledge centric content. Over the past few decades, information and communication technology has supported industry environment in countless ways to achieve rapid growth through better business operations and by developing essential building blocks for skill-based economy.

It's a matter of pleasure that Department of Computer Application, Integral University has planned to hold an ***"International Symposium of Recent Advancements in Information and Communication Technology"*** on 5th, 6th and 7thNovember 2020, wherein renowned experts, academicians and scholars will grace the event and share their valuable knowledge about the advancements in Information and Communication Technology.

On this occasion, I congratulate the Organizing Committee and wish that the International Symposium may achieve grand success.

4/11/20

Prof. (Dr.) T.Usmani
Dean
Faculty of Computer Application

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Message

Epidemics and pandemics have been threatening the human race time and again. SARS, H1N1, Ebola, and more have shown their teeth in the past, but with each such outbreak, we are learning new ways of fighting and managing such unexpected diseases that can potentially kill millions of people. Technology cannot prevent the onset of the pandemics; however, it can help prevent the spread, educate, warn, and empower those on the ground to be aware of the situation, and noticeably lessen the impact. As countries around the world put up their best fight against the pandemic, the ICT industry is playing a key role in this journey.

In an increasingly globalized world, there is a critical need to develop innovations and best practices for promoting research at an International level. To this end, The International E-Symposium on recent advancements in Information and Communication Technology organized by the Department of Computer Application, Integral University, Lucknow shall serve as a fundamental landmark that will be beneficial to integrate research throughout the world.

It is important to imbue good values and practices early in our young researchers, starting at the undergraduate level. Not only should we guide them but more positively, we must educate them about the best practices in research.

It is gratifying to note that the theme of the symposium covers a wide range of recent advances in the fields of Cyber Security, Information Security and Forensic Science, Computer Vision and Image Processing, Software Engineering, Artificial Intelligence, Data Science, Machine Learning, Internet of Things (IoT) and Cloud Computing, Blockchain Technology, ICT Role in COVID-19 Pandemic.

I also congratulate all the contributing authors. Their contributions have curated new discussions and will leave an imprint on the young minds that will last for the years to come.

The symposium promises to be an exciting event, a platform for thought-leaders, academicians and researchers from a plethora of disciplines to showcase research developments while providing a collegial atmosphere for exchange of ideas.

It is an opportune time to renew contacts and discuss research problems of mutual interest with delegates from across the Globe. I hope that the symposium will be academically rewarding and will create openings for research in new domain.

I wish everyone a successful and fruitful symposium.

Dr. Mohammad Faisal
Organizing Chair,
RAICT2020

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Message

It is my pleasure to be a part of this three days International Symposium on "Recent Advancements in Information and Communication Technology" in which our whole team fulfilled its commitment to tender a virtual platform for assembling eminent academicians, enthusiastic researchers, technological experts and aspirants in the same domain and industry representatives. This E-Symposium has attained approximately one hundred twenty abstracts under their specific technical tracks form National and International academicians, researchers and students and they have facilitated with online presentation. There were around eight National and International experts belongs to Institute of Excellence and National Importance who grace this virtual event by their knowledge, experiences and expertise.

The current need of online platform for the better execution of all kinds of organizational and industrial functionality represented the emergence of Information and Communication Technology and its applications. The organizing committee is presenting the E-Souvenir of this valuable International Symposium with a great deal of pride and pleasure which cover a wide range of issues addressing the challenges and future aspects in the same field.

I hope that the participants and authors were certainly enjoyed the inspiring interactions with our speakers, experts and other participants as well as delight in the picturesque views of Integral University. I hope that the keynote lectures, panel discussions and technical note presentation provided all delegates an opportunity to gain deeper insight into the multidimensional problems and variety of solutions offered to resolve them.

It is my immense pleasure to thank all members of the organizing committee for making this International Symposium a great success.

Dr. Sandeep Kumar Nayak
Convener,
RAICT-2020

Message

I welcome the participants of RAICT-2020. The main goal of organizing this symposium is to share and enhance the knowledge of each and every individual in this technological era. We are facilitated with a good opportunity to provide a platform for those who have a strong interest in knowing the present technological developments. Furthermore, this symposium also facilitated the participants to expose and share various novel ideas and research.

As Information and Communication Technology, has invaded all the possible areas of education, business and communication. To effectively benefit from any technology application, it is essential that education professionals set themselves ready for transforming their practices and keep identifying effective ways for transformations in their contexts.

This symposium provides a very distinctive objective for everyone, and it has attracted delegates from all over the world; speakers with wide-ranging knowledge and well-built research background. I would like to recognize the enormous efforts that our colleagues have made to adapt to new ways of working during this pandemic.

I would like to extend my heartiest gratitude to Prof. R. Balasubramanian and Prof. Dharmendra Singh for providing their expert technical notes in such a short span of time. I feel indebted to Dr. Leslie Ramos Salazar for making this event a grand success by her auspicious presence, despite of her busy schedule. I cannot thank each of you enough for all your professional expertise and support in making this event such a resounding success. Our goal was to have simple, but elegant affair and we surely did it.

I deeply acknowledge the hard and passionate work done by my colleagues, members of organizing committee, technical committee, supporting staff and students. I hope this event will outreach to diverse audience.

Dr. Tasneem Ahmed,
Convener,
RAICT2020

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Message

RAICT 2020 is not just a symposia but a great virtual meetup for all the technocrats. Such meetups always help us to collaborate with the people of interest. It gives me immense pleasure to write as an Organizing Secretary for this International E-Symposium on "Recent Advancements in Information and Communication Technology" organized by the Department of Computer Application, Integral University, Lucknow. I am stunned and amazed by this flamboyant aura of technology and delighted to see the efforts taken by everyone for the betterment of our society during this challenging time.

A sea change has taken place in the last few decades in Information Technology and allied disciplines. However, the vision and mission of the society has largely remained unchanged which is to be relevant, dynamic, and contemporary. Like several technologies become obsolete and tools become redundant, the advancements and changing needs also necessitate redefining varied disciplines. Today we see the significance of technology in every step that we take and through this symposium we have created a platform to bring various stakeholders on one virtual screen to discuss the pivotal role of ICT in present pandemic.

We are planning to have best technical sessions by eminent keynote speakers in diverse tracks and oral presentations of abstract authors. The thematic talks and the plenary session will drive you through the multi sectoral emergence in the Information and Communications Technology. This could be the first E-Symposium of its kind in the region where everyone could have an opportunity to showcase and present their ideas, thoughts, developments that could lead to a meaningful life in the community.

I thank each and every one of you who are contributing to the success of the symposium. We will spare no effort to make this event one of the best ever. This symposia has been organized not only for interaction but with the intent of building a long lasting collaborations at national and international level.

Let us together infuse new enthusiasm with knowledge and align with current possibilities in digital era.

Ms. Nashra Javed,
Organizing Secretary,
RAICT 2020.

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- Mr. Syed Adnan Afaq

KEYNOTE SPEAKERS

Dr. Leslie Ramos Salazar

Associate & Abdullat Professor of Business Communication and Decision Management,
Paul and Virginia Engler College of Business,
West Texas A&M University, USA

"The Rise of Cyber Bullying in the Technology Age"

An aggressive, intentional act carried out by a group or individual using electronic form of contact repeatedly and over time against a victim who cannot easily defend himself/herself is known as cyber bullying. Sources can be text messages, email, chats, websites, online games, social networking sites. Cyber bullying can be of various forms like- harassment, exclusion, masquerading and outing. Many countries and its citizens are unaware of cyber bullying like Saudi Arabia whereas country like Italy has seen an increase in the awareness. Total 36.5% people have been cyber bullied in their lifetime out of which 87% are of young age. In 2020 world has seen a rise in such cases. 53% of children aging between 8-17 years are cyber bullied in India. Main reason of cyber bullying is increased due to screen time i.e. always online which has been increased during Covid-19 pandemic and lockdown. As most of the work and classes were conducted online hence 70% cases of cyber bullying and 40% of toxic behavior has been increased. This pandemic has increased stress, isolation, decreased supervision and boredom. Strong policies should be formed and amended strictly by social media companies. ISP should follow censorship policy of the country in order to prevent cyber bullying. Various apps like Bully Block, Cyberbullying First Aid and Cyberbully Hotline can be used for intervention. We should understand it's a matter of cooperation not an isolated problem hence its awareness, prevention and implications are much needed.

Prof. Dharmendra Singh

Institute Chair Professor
Professor & Head
Department of Computer Science and Engineering
Coordinator, RailTel - IIT Roorkee Center of Excellence in Telecom
Professor in Deptt. of Electronics & Communication Engineering
Microwave Imaging & Space Technology Application Lab
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"IoT and Sensor Based System for Agriculture Revolution"

Land monitoring can be done by ground truth survey, satellite images, and airborne sensors, while satellite images plays an important role because it is less time consuming, requires minimum user intervention and covers large area. Generally, satellite images are acquired in two ways: (i) Optical where capturing of images can be done in day time only but its processing is easy and (ii) Microwave where images can be captured in both day and night time and it is weather independent. There are three types of image resolution of Satellite Images: Spatial, Spectral, Temporal and Radiometric. Satellite images advantages are global data set, rapid data acquisition; different bands contain information and provide data of inaccessible areas. Besides advantages it faces few issues like problem of mix pixel, boundary class and geo-referencing problem. Main challenges in this field are the type of data provided to the user. These days user wants to handle most of the tasks with their mobile so the data captured here are bulky images, takes more time in interpretation and analysis and a costly medium. The challenges of land use/land cover (LULC) can be overcome by Cloud storage and computing. IoT can be taken as solution to these shortcomings as it can provide various data at one platform. IoT uses sensors technology to capture data. It has three layers: Application, Information Exchange and Data Acquisition Layer. IoT sensor network technology can quickly obtain farmland environment data, real-time and accuracy of data is maintained as compared to traditional method. Sensors capture the data which is transmitted to background processing centre. The structure of IoT agriculture is agriculture greenhouse production environment measurement and control system which is made of terminal link, business link and M2M support platform. Benefits that can be extracted are Real time surveillance and information analysis, automatic control and distributed management of the agriculture information aobtained through IoT devices.

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"Application of Machine/Deep Learning in Vision and Imaging"

Machine learning is the ability to learn without being programmed by the computer. Machine learning can be supervised – telling what to do, unsupervised – learning by self-experience and reinforcement- by giving rewards. Deep learning is associated with the workings of the human brain in processing data for use in detecting objects, recognizing speech, translating languages, and making decisions. Electrocephalogram (EEG) is headset consists of 14 channels that are used to record brain activities while watching videos. Brain signals can be converted to digital signal by wearing such gadgets. These devices receive the analog signal by attaching itself to scalp then of the human and translate them to digital signals. In this study, a fusion of two different modalities has been proposed: (i) EEG- a brain wave sensing technology that measures and records the electrical activity of the brain and (ii) Sentiment Analysis- it represents the opinion or attitude of a writer towards a product like videos, products etc. Human Action/Activity can be gestures, actions, interactions whose recognition has been proposed in the model. A four stream Architecture has been proposed to predict the next move by using deep learning. Its applications are Action Recognition, Virtual Reality, Surveillance, Health care where predictions can be done on the basis of past actions. In situations like pandemic these technologies can be helpful as we can join videos and predict the next few number of steps. Video can be 6-10 minutes long can be generated its virtual reality.

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Machine Learning, Bias and Fairness

Machine Learning is the automating automation. Let the data to do the work instead. Machine learning focuses on the development of computer programs that can access data and use it learn for themselves. In traditional programming language we need to put data and program while in Machine Learning we simply pass data and output to get the desired program. Machine Learning has basic three components: (i) Representation-selecting a model to present the data. They can be decision tree, set of rules, neural networks, instances, support of vector machines, (ii) Evaluation- optimize the objective function given different values for the model parameters. Algorithms can be evaluated on the basis of accuracy, precision and call, squared error, likelihood, posterior probability, cost/utility, margin, entropy, K-L divergence and (iii) Optimization- estimate model parameters using optimization methods. This can be achieved in various ways like Combinatorial Optimization E.g.: Greedy Approach, Convex Optimization E.g., Gradient descent, Constrained Optimization E.g., Linear Programming. Machine learning is categorized in three categories such as supervised learning- learn through a training, unsupervised Learning- learn by self-experience and reinforcement Learning- teach by giving some reward or gift. Fairness in ML is considered when its result is independent of given variables especially sensitive one such as the trait of individuals which should not correlate with the outcome. Bias in data is when an algorithm produces results that are systemically prejudiced due to erroneous assumptions in the machine learning process. Challenges in ML are synthesizing a definition of fairness. Focus should be made on removing the discrimination during the model training process so that fairness can be achieved in AI and ML.

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Cyber Security – The Changing Landscape and Research Opportunities"

The amount of research on cybercrime has grown exponentially over the last few decades. Much of the preliminary work in this area focused on exploring how the nature of cybercrime and cyberspace differed from traditional crime and recent advancement where IPR breach, Network Sabotage are traditional cyber security and Cloud Security, IoT Security, APTs are recent ones. In recent years though, the threats have become more advanced and they now target multiple devices and networks too. But we are very well aware of the fact cyber crime and measures to be taken. Social engineering is a manipulation technique that exploits human error to gain private information, access, or valuables. In cybercrime, these "human hacking" scams tend to lure unsuspecting users into exposing data, spreading malware infections, or giving access to restricted systems. Advancement in technology such as Mobility (Geographic Knowledge Discovery), Data Mining, Cloud computing etc. brings unforeseen challenges and one of the major challenges is threat to "privacy". Social network analysis is a basic mechanism to observe the behavior of a community in society. In the huge and complex social network formed using cyberspace or telecommunication technology, the identification or prediction of any kind of socio-technical attack is always difficult. This challenge creates an opportunity to explore different methodologies, concepts and algorithms used to identify these kinds of community on the basis of certain pattern, properties, structure and trend in their linkage. Despite extensive research conducted in authentication system, security issues are still a challenging task. The most common authentication mechanism is Username and Password. Due to its lack of efficacy, it has been proved as weak method for authentication. In the recent years, biometric authentication methods have been receiving increasing attention.. Lack of proper security control policy and weakness in safeguard lead to many vulnerability in cloud computing. It is needed to focus on the problem of data leakage and proposes a framework which works in two phases.

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Application of Fog Computing in Healthcare Internet-of-Things

IoT in Healthcare is a heterogeneous computing, wirelessly communicating systems of application and devices that connects patients and health providers. It diagnoses monitor track and store vital statistics and medical information. In 2020 there will be around 50 billion connected IoT devices which will generate 507.5 zettabytes of data. Health Care market for IoT is estimated to hit $117 billion by 2020. The main issue with QoS requirements for E-healthcare services and data transfer rates is to minimize the latency for real time monitoring or real time robotic surgery. Convention data transmission between health care IoT and cloud suffers with multiple hop count. This creates delays in real-time transmission of data. To minimize aforesaid issues a Fog Layer is created between health care IoT and cloud data centre is proposed where fog nodes will be geographically distributed to provide and differentiate requirements of time sensitive and historical data. Three-tier Fog Computing architecture is proposed with layers cloud data centre ↔ communication network ↔ fog layer ↔fog gateway ←medical devices. Simulator Tools has been proposed to minimize computational latency accessing time sensitive health data. For E.g., Edge Fog is using Python, Qos & Energy Consumption, Distribute task processing. FBRLNNES is the proposed algorithm for such computing. iFog Simulator is used to simulate fog nodes and health care IoT framework. Using the GUI in the simulator, we created physical elements such as fog devices, sensors, tuples and connected links. Tele-surgery, robot surgery and telemedicine can be implemented in health care IoT by the proposed FC-based technique.

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Brain-Computer Interfacing

Brain Computer interface is a communication system that do not depend on peripheral nerves and muscles. Through EEG cap human brain signals are read, converted and passed to computer system. Any kind of neurological disorder or brain related task can be accomplished. Paralyzed patients can be made to communicate their words to computer interface that recognizes EEG signals and translates them to commands with the designed algorithms. Non-invasive approach uses brain electrical activity recorded at the scalp via EEG. Devices like BCI based Stroke Rehabilitation System can capture any thought of paralyzed patient even regarding movement of any body parts. Human brain is made up of neurons which are connected to each other by axons and dendrites. Electrodes detect electric signals in the brain that are sent to a computer and then these signals are translated to be used by devices or computer. The main aim of BCI is to provide assistance to disable people like case of Amyotrophic lateral sclerosis (ALS), Cervical Spinal injury, Stroke paralysis, Cerebral Paralysis, Amputee etc. When we get the neuro signals we do the signal acquisition then we do the feature extraction and train the machine learning algorithm and these deceives are controlled. After a feedback is also given to the user. BCI can be of following types: Invasive – Neurosurgery, Partial – EcoG and Non-Invasive – EEG, MEG, FMRI. EEG- Electrocephalogram records electrical activity from the scalp in the waveform signals and records montages: Bipolar and Referential. If we record data from scalp it is EEG but if it is recorded by a chip inserted into brain through operation then it is termed as ECoG MEG devices are huge like SQUIDS which is used for direct external recordings of magnetic fields created by electrical currents in cortex. They use femto Tesla to pico Tesla. They usually need magnetically shield rooms and supersensitive sensors. Major challenges of EEG and MEG are noise and outliers, high dimensionality, small training sets, non-stationary.

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Smart ANKSys-HMI: An Agile Operation and Decision Support Pilot-Scale WWTP

Eco-efficient ANAMMOX deals with the fundamental elimination of toxic nutrients as per the stringent environmental regulations. Several technologies are implemented for nutrient removal; however, implementation is a challenging task due to the process complexity, non-linearity, and anomalies involving sensor failure, online monitoring, time-consuming, growth in consumable cost, decision support gap, and sludge pumping for robust operation. In this study, an intelligent human machine interface (HMI) i.e. advanced numerical solution for knowledge based system (ANKSys) is developed by integrating data driven from supervisory control with fully optimized functionality (i.e. soft sensing, decision making for an engineer, and a mathematical model simulating sequencing batch reactor (SBR)) and advanced algorithms (i.e. artificial neural network (ANN), KALMAN filter, principal component analysis (PCA), least square technique) by using the advanced software (i.e. MATLAB® R2018a, Microsoft® Visual Studio IDE 2016, Microsoft® SQL Server 2014, OPC Automation for connection with XGT series PLC product group that combines the technology of LSIS). It was a great opportunity to conduct these distinct control strategies for enhancing energy consumption at a Pilot-Scale "LEAOX" WWTP located in Daegu (Republic of Korea). The outcomes showed that an accurate optimization of biological nitrogen removal processes, as well as maximum sustainable WWTP operation for operator/engineers by using ANKSys technology, can be achieved.

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Track 1

Cyber Security, Information Security and Forensic Science

Electronic Health Records: Security Issues and Challenges

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From last few years healthcare industry abruptly replaces the conventional paper-based systems with electronic digital systems. Digitization in healthcare sector revamps the care services, makes them cost effective, and provides the concept of telemedicine. From this transformation in healthcare industry digital data is produced in huge amounts. The produced data is in the form of electronic health records (EHRs). An EHR is a digital version of patient's paper-based chart. These electronic records holds the medical and treatment details of a patient and provides real time access to patient data to all authorized users. Implementation of EHR systems in healthcare environment enhance the patient participation and care-coordination, makes the patient data easily accessible any time, overcome the physical contact of patients and doctor, revamps the disease diagnosis and enhances overall treatment outcome. However, from the authentic reports and reputed research studies it has been found that healthcare data industry is one among the top three data industries of the world that faces highest number of data breaches from last few decades. Every year the number of data breach incidents and the number of records exposed from these breaches depicts a rapid growth. Dynamic nature of healthcare environment make healthcare data more susceptible to intruders. In this research endeavour we will discuss the EHR environment of healthcare sector and the various security issues and challenges faced by it. How these data privacy and security concerns affect the care providers and other stakeholders.

Keywords: Healthcare Data, Electronic Health Records, and Data Security.

Security Study on IoMT in the Healthcare

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Internet of Medical Things (IoMT) technology over the years gaining a significant amount of traction, we can access the information and track the health of the patients. IoMT developed due to traditional healthcare was suffering from new challenges like increases number of patients and

technology. When, IoMT introduced than IoMT increased the accuracy, reliability, efficiency, and effectiveness of the healthcare. IoMT exchange the healthcare data with the help of wireless network. With the advancement in the technology and growing population healthcare costs for the services are increasing. IoMT and healthcare integration can create more cost-effective system, which can provide the better life, better care services of the patients. Now days IoMT is implemented in the healthcare increasing over the world, But IoMT has many security and privacy issues. However, IoMT often lack of strong protection, leaving patients privacy at risk. Cyber-attacks threat the IoMT From the day one of its initiation. Various attacks make the reason for the disasters to people and network also due to lack of the improper security and protection mechanism. In this paper, we will introduce the IoMT, types, status, analyze the IoMT and demonstrate that improper protection schemes can be easily bypassed and that devices can be compromised to leak the patient's data.

Keywords: Cyber Security, IoMT, and Healthcare.

Cyber Security Challenges and It's Need in Smart Security

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The term cyber security is often used interchangeably with the term security of information. This paper suggests that these two terms are not entirely equivalent, although here is a considerable correlation between cyber security and information security. The article also indicates that cyber security goes beyond conventional information security limits to include information resource protection and other properties, including the individual himself. Reference to the human element in information security typically relates to humans' role(s) in the security process. This aspect has an additional dimension in cyber security, namely, humans as possible targets of cyber-attacks or even engaging unknowingly in a cyber-assault. This additional dimension has ethical consequences for society since it may be seen as a social responsibility to protect such marginalized groups, such as children. Today, the world is upgrading to digitalization, which increases reaction time and customer service everywhere in the world. Our environment is operated by software; it makes our banks' functionality, power plants, communication and

fighting equipment. In order to function effectively and efficiently, hospitals, medical equipment, and vital infrastructure, such as the electrical grid and entertainment industry, all rely on software. Most services are provided through software today. This poses major security and privacy concerns; if appropriate measures to secure their gadgets are not taken; confidential information may be leaked from the particular. To protect the system, network, and hosts, a number of techniques have been developed. And if the bulk of attacks are still taking place. It is essential to fix security issues at an early stage in order to mitigate security breaches.

Keywords: Cyber Security, Digitalization, Smart Security, and Cyber-attacks.

A Survey on Cyber Security for Smart Grid Communications

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A smart grid is a modern type of electricity network using digital communications and control technology, progressive and revolutionary regime of current power grids with high fidelity power-flow control, self-healing, energy efficiency, and energy protection to as the next-generation power infrastructure. A smart Grid is expected to dramatically increase the efficiency and reliability of future power grids with renewable energy resources, as well as distributed intelligence and demand response, with the convergence of advanced computing and communication technologies. It needs substantial reliance on intelligent and stable communication infrastructures to upgrade an existing power grid into a smart grid. Security frameworks for distributed communications, ubiquitous computing, and Smart grids sensing technologies are needed. However, because many of the communication technologies currently proposed for use by a smart grid are vulnerable to cyber security, it may lead to ineffective device operations, causing both utilities and customers excessive investment and even a consequential catastrophe. In this paper, we present a detailed survey of cyber security problems for the Smart Grid. The cyber security criteria and potential weaknesses in smart grid communications are outlined, and existing cyber security solutions for smart grid communications are designed. We concentrate on evaluating and addressing security specifications, network vulnerabilities, countermeasures to attack, Smart Grid secure communication protocols, and architectures. We intend to provide a deep understanding of the

Smart Grid security vulnerabilities and solutions and shed light on future Smart Grid security research directions.

Keywords: Cyber Security, Smart Grid, and Ubiquitous Computing.

COVID-19: As an Opportunity for Cybercriminals

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The entire world is experiencing one of the worst pandemics of this era. The COVID-19 outbreak has an enormous effect in the whole world and grinded different countries to a halt already. The COVID-19 outbreak has not simply had health and financial insinuations on industries, individuals, administrations and government but has also grown into a tool for hackers and cyber-criminals to use in cyber-attacks. During these critical times cyber security become more significance, as the situation is very much suitable for cyber criminals to attack. At the starting of the COVID-19 pandemic, WHO has suffered various growth in the amount of cyber-attacks focused at its team, and email scams directing the public at enormous. According to WHO 450 email addresses and their passwords of WHO were compromised online in the month of April 2020.Scammers imitating WHO in emails have also gradually targeted the general public in order to donations to a pretended fund and not the authentic COVID-19 Solidary Response Fund. This study analyses the cybercrimes and types of cyber security threats which are tackled during COVID-19 pandemic in the entire world. Various agencies like United Kingdom's National Cyber Security Centre and the United States Department of Homeland Security and Cyber security and Infrastructure Security Agency issued a combined advisory on how cyber-attackers were misusing the current COVID- 19 outbreak as an opportunity. As per WebARX Security reports numerous attackers have effectively used this pandemic situation to craft malware and phishing attacks against unaware individuals and organizations. The attackers have created a myriad of fake and dangerous websites that steal sensitive information from users through phishing. Study shows that the phishing attacks had increased by 350% since the occurrence of the pandemic. There are attackers who have implanted malware into mobile applications that are supposed to track the progress of COVID-19, with the apps having the ability to steal essential information from the users. Scams have also been on the rise during the pandemic, with respected authorities pointing out their prevalence during this period. According

to the Federal Trade Commission, scammers take benefit of the fears and anxiety that people have related to the novel coronavirus, attracting them into purchasing items that they do not required. The attackers are also likely to attempt economical fraud by sharing links to fake charity courses and donation platforms while spreading malware. The Ministry of Electronics and Information Technology released report that citizens of India, commercial and legal entities suffered almost 7 lakh cyber-attacks till August this year. Twitter faced a major hack in this year wherein some attackers were able to get access to its inside systems to get regulate of the accounts of major public figures and corporations, including Indian Prime Minister, U.S. presidential candidate Joe Biden, former U.S. President Barack Husain Obama, Microsoft co-founder Bill Gates. In this pandemic various methods are used by the cyber criminals and scammers such as Phishing, Fake URLs, Preying on the good of people for donation, Spreading Misinformation, fake messages like your COVID-19 tests have arrived, Your family member has been hospitalized; we urgently need you to help with a donation etc. Although a lot of method and measures have been developed to monitor and prevent the cyber-attacks but still its very challenge for all the industry. Cyber-Ethics, Cyber-Safety, and Cyber-Security issues must be incorporated in the educational process starting at an early stage.

Keywords: Cyber Security, Cyber Ethics, Cyber-attacks, COVID-19, and WHO.

A Survey on Concepts, Applications, and Challenges in Cyber-Physical Systems

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The Cyber-Physical System (CPS) is a concept that describes a wide range of complicated, multi-disciplinary, next-generation engineered systems that incorporate embedded computing technologies (cyber components) into the physical world. By integrating computation and physical processes, Cyber-Physical Systems (CPSs) are defined. There are immense challenges to the theories and implementations of CPSs. This article provides a comprehensive survey of the relevant work, addressing the roots of CPS, the relationships to other research areas, prevalent principles, and practical applications, in order to describe and understand CPS more precisely. The goal of this research is to provide a better understanding of this new multi-disciplinary

approach, this paper lists a wide range of technological problems and uses concrete applications to elaborate and provide insight into each particular definition. CPS is a very wide field of study and thus has numerous applications covering various scales. First, the features of CPSs are defined and the progress of the research is summarized from various perspectives, such as energy control, safe control, transmission and management, control techniques, allocation of device resources, and design of model-based software. Then three classic applications are provided to show that CPSs' prospects are engaging. Finally, the difficulties of research and some ideas for potential studies are briefly illustrated.

Keywords: Cyber-Physical Systems, and Embedded Computing.

Role of Data Science in Cyber Security: An Overview from Machine Learning Perspective

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The combination of digital technologies and business processes has made the IT infrastructure and systems vulnerable and enhanced the demand for businesses to have robust cyber security systems in place. Many organizations do not have the resources and insights needed to identify, prioritize, and mitigate the existing and upcoming threats. This has collided with its ability to combat cyber threats efficiently. Organizations need to have a cyber-security policy that includes remote networking with regular reviews. Security policies must be acceptable for multiple workers working remotely and must include the use of personal devices. Organizations must also adjust their security tools for a remote work setting. Cyber security is the process of defending your computers, electronic systems, networks, programs, mobile devices, and data from malicious digital attacks. Nowadays, cyber security is undergoing enormous shifts in technology and its operations in the context of computing, and data science is driving the change, where machine learning, a core part of Artificial Intelligence can play an important role to identify the insights from information. In this paper, we focus on cyber security data science, data science extract security incident patterns from cyber security data, and build the corresponding data-driven models to make the security system automated and intelligent. To understand the absolute phenomena with data, variant scientific methods, machine learning techniques, and processes are used, which is known as data science. In this concept of cyber security data science, the data is

being forgathered from relevant cyber security sources and analytics accompaniment the data-driven patterns for providing a more efficient security solution. Data science through the powerful analytics system help strengthens the cyber security industry. It allows IT professionals to come up with a more operative, preventive, and active measure to avert cyber-attacks. By involving data science, you can start to build impervious protocols. For example, by analyzing the history of your cyber-attacks, you can develop algorithms to identify the most frequently targeted block of data. Nowadays, many researchers use the term "data science" to define the multidisciplinary field of data collection, preprocessing, or making decisions by analyzing the data. To understand and analyze the absolute phenomena with data, variant scientific methods, machine learning techniques, and processes are used, which is known as data science. The machine learning technique recognizes patterns in data to help machines learn from experience. A key benefit of machine learning is that it recognizes and responds to an issue immediately. It averts potential threats from disrupting business operations and makes it faster to counter threats. And with the help of machine learning techniques, AI can learn patterns quickly and process massive volumes of unstructured information to provide insights with higher efficiency. The conclusive goal of cyber security data science is data-driven intelligent decision making from security data for smart cyber security solutions. Cyber security data science represents a paradigm shift from traditional known security solutions such as user authentication, firewalls, and access control, cryptography systems, etc.

Keywords: Cyber Security, Data Science, Machine Learning, and Cyber-attacks

Application of Security Model in Wireless Sensor Networks

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Wireless sensor networking is an emerging technology that promises a wide range of potential application in both civilian and military areas. Wireless sensor networks are result of developments in micro electro mechanical systems and wireless networks. These networks are made of tiny nodes which are becoming future of many applications where sensor networks are deployed in hostile environment. The deployment nature where sensor networks are prone to physical interaction with environment and resource limitations raises some serious questions to secure these notes against adversaries. The traditional security measures are not enough to

overcome these weaknesses. It explains that why network security is important and how we can secure network when we are using different types of networks at different fields. The next section explains the various techniques which we used to secure networks. In proposed model emphasizes on three areas such as (1) Cluster formation (2) Secure key Management Scheme (3) Digital Signature to implement the security model in wireless sensor networks.

Keywords: Digital Signature, Security, and Wireless Network

Identification and Mitigation Strategies of Malware Attacks

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In today's era, as the digital technologies are increasing day by day, the security issues are also increasing along with it. The security issues caused by multifarious software features, interactive multi-language features and the use of third party apps are increasing exponentially. Malicious software is one internet user's major problem. Cyber-attack is the most common problem now a days and it is challenging for experts to stop malware attacks. In this article the various aspects are discussed and addressed through many strategies such as identification, regular backups and many more to reduce malware attacks. JavaScript is the new favorite cybercrime weapon. JavaScript attacks are often symptomless because according to the "Site Lock 2019 Website Security Report," 33% of files cleaned by our malware scanner were JavaScript files. Another case is COVID Lock ransomware 2020, this ransomware of Android performs a lock-screen attack against its victims. This type of ransomware infects victims via malicious files promising to offer more information about the disease. Some vulnerability was found in 2020, including injection, authentication broken (usually refers to logic issues arising in the application authentication mechanism). This article highlights key problems together with several aspects for experts to discuss how users are confronted with various kinds of internet issues, to detect that problem and at the same time to mitigate such problems through user awareness, social engineering, malware analysis and quality research. Further, the author will discuss about malware attacks and identify ongoing malware attacks in recent times, and how experts managed to overcome these attacks. In addition, the author will also discuss the necessary steps to resolve the issues.

Keyword: Ransomware, Injection, Authentication, and Social Engineering.

Current Issues and Challenges of Digital Memory Forensics: Security Perspective

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Digital forensics has traditionally focused on objects that are found on Smart Phones, different Storage Devices, Digital Cameras, user's computer, and other Electronic Gadgets. Memory Forensics may provide unique insights, including open Network Links and Recently Executed Processes or Commands into runtime system operation. Over the last decade, however, researchers have developed a variety of advanced memory forensics tools that expand the scope of digital forensics to include the analysis of volatile memory. In certain instances, sensitive data pertaining to attacks or threats will only exist in device memory examples include internet connections, user account details, user chat logs, encryption keys, running processes, injected code fragments, and non - cacheable internet history. Memory forensics tools and techniques are in high demand for security experts nowadays due to attack techniques becoming increasingly sophisticated. Many network-based cyber security solutions are unable to detect malware directly written into the physical memory (memory dump) or Volatile RAM of a device, such as a variety of Antivirus and firewall tools. Digital forensics is a sub-part of memory forensics. This is a major area of study that gathers evidence in digital form. Numerous elements such as Memory Acquisition, Volatile Data, and Memory Dump are used in memory forensics. The expansion of law-breaking and attacks is seen in the latest survey report and investigation report. Forensics experts and the Forensics Business are willing to promise to promote and wish continuously. Rhetorical memory is said to recover data. This paper presents the same information regarding the rhetorical and current memory problems, tools, and challenges in the security perspective of memory forensics. Security teams should look at memory forensics tools and specialists to secure invaluable business intelligence and data from stealthy attacks such as Fileless, In-Memory Malware or RAM Scrapers, Point-Of-Sale (POS) systems (smart cash registers) etc. The study concludes that rigorous analysis is important and essential in the field of forensic digital memory resources.

Keywords: Memory Acquisition, Volatile Memory, Memory Dump, Memory Forensics Challenges Tool and Techniques, Point-of-Sale (POS), and RAM Scrapers.

The Role of Cyber Security in Digital Life

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The digital era is undoubtedly ruling on our lives. It has many advantages but some disadvantages too. In today's world, every aspect of our life has a part of digitalization that is sometimes witnessed by cyber-attacks. In order to maintain our safety on digital platforms there are numerous works that have been done by Cyber Cell. In this article, the author discusses how cyber securities simplify and secure our life on Digital platforms. This study examined that the trends discussed highlighting the need for organization to defend themselves against a malware infection. This can be done by investing in a solution that both provide detailed reports about relevant system changes. In this context, the research will help to raise awareness of malware and its causes. In short, the top five threats to the digital world are malware, Trojan horse, ransomware, phishing and outdated software. The identification of these attacks shows that majority of the attacks occur through the mobile apps and websites that are easily spread to deliver malware through drive by downloads, redirects, prompts for fake offers and updates or scam web links for phishing. Without the proper knowledge of the right invigilation, you never know your digital devices or properties readily attack your users, both the customers and employees. The results and ideology of this study will definitely help practitioners to explore the cyber security and the threats in digital life. Finally, it also demonstrates the significance and need of comprehensive cyber-security analysis.

Keywords: Malware, Trojan horse, Ransomware, and Phishing.

Cyber Security, Threats, Related Crime and Awareness

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The contemporary era is technology based and includes access to internet which is in reach of all whether rich or poor. Internet usage has become a necessity and hence, line-of-life. Today, the internet is used in every possible field and therefore, the total number of cyber users has also increased five-fold in the last few years. Along with an increase in users and related cyber activities, there has been a wholesome increase in cyber security-related threats, incidents and

crime. As security remains the main concern, there must be awareness among users to ensure that they are 'cyber-secure', while connected to the internet. Due to increased number of cyber-attacks, the main challenge lies in protecting and securing the information. Therefore, there is a foremost need of making people aware of the secure and protected usage of internet, cyber related threats, so that technological and physical security along with sensitive information are not put under risk. This paper aims at awareness about internet related security, crime and threats, to ensure secure usage of internet and make the most out of it.

Keywords: Contemporary, Five-Fold, Line-of-Life, Cyber-Secure, Security, and Awareness.

Identifying Key Tor Hidden Services using Hyperlink Analysis

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The dark web employs sophisticated encryption techniques to hide the anonymity of the users. The Tor network is the most commonly used method of accessing dark web sites called hidden services. Several studies on the content of the Tor dark web have revealed the large amount of illegal and unethical activities being carried out there. The law enforcement agencies continuously monitor the dark web to bust down the illegal services. The identification of the prominent hidden services in the Tor network could help the law enforcement agencies in focusing their efforts on the key hidden services dealing in illegal businesses. The hyperlink analysis of the Tor web graph could be used to identify the key hidden services. Several graph centrality metrics like the betweenness centrality, degree centrality, PageRank etc. could be used for that purpose. However, each of them may suffer from some drawbacks if used alone. In this work, we have proposed a hybrid approach to detect the influential hidden services from the Tor web graph. A metric based on the text content is proposed to quantify the influence of a hidden service. The influence metric is incorporated in a modified PageRank algorithm to rank the hidden services in a graph. The proposed approach is tested on publicly available datasets. The performance of the proposed approach is measured by the standard metrics for rankings. The top-ranked hidden services could be the influential one that needs immediate attention from the law enforcement agencies.

Keywords: Tor, Dark Web, Hidden Services, Illegal Services, and Metric.

Cyber Security Threats during COVID-19 Pandemic

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Cyber security is mainly about people, processes and technology working together to cover the full range of threat mitigation, mitigation of vulnerability, prevention, international participation, response to events, resilience, policies and activities for recovery. The growth of the internet has led to the virtual world growing its hacking space. Cyber protection includes securing data and infrastructure from cyber threats. Cyber challenges have taken a different dimension with the latest COVID-19 pandemic that has spread to most countries in the world, because most workers operate from home, consumers often purchase goods from the comfort of their homes according to their government orders, and as a result, keeping pace with cyber security threats, technology solutions and operations has become a daunting challenge. Today, cyber security has never played a more important role than protecting mission-critical organizations and agencies from cyber-attacks, particularly during the COVID-19 pandemic. The rapid, widespread implementation of work-from-home has put tremendous strain on cyber security by both security professionals and workers. In this study, we discuss cyber security status on the basis of three key points: first, the resources that make homework, second, cyber security threats during the pandemic, and third, security measures to preserve security requirements such as confidentiality, integrity, accessibility and privacy. This study also looks longitudinally at the current mainstream adoptions of technology for employee-employer engagement methods and changes in digital business processes that are profoundly successful since the COVID 19 pandemic for business continuity.

Keywords: Cyber Security, Covid-19, Pandemic Threats, Cyber-attacks and Measures.

A Study of Crimes and Forensics Science

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We the people of 21st century are surrounded by various advancement and growth of technology in various factors including crime and case study too. Nowadays, people are very flawless in the

case of conducting crime by using network and internet technology, these crimes are known as Cyber Crimes. Every individual possesses their devices such as their smartphones, computers are fell under attack by fraudulent persons that leads to the increase of cyber crimes. Digital forensics and Forensic science are the vast areas to investigate such crimes. Forensics is termed as scientific methods or applications in association with the judicial system or court of laws which is to unveil the digital evidence to be used in court for solving crime cases. Forensics is used in the crime's investigations in criminal laws. Forensic sciences have categories in the term of solving criminal cases which are Digital Forensics and DNA Forensics. Digital Forensics is the science that encompasses all the investigations and research used in solving these types of computer crimes. It deals with investigation over devices capable of storing digital data. Digital Forensics can be categorized into four types which are Database Forensics, Network Forensics, Mobile Forensics and Computer Forensics. On the other hand, DNA Forensics is termed as the use of DNA segments to find out the sequences of nucleotides bases arrangements. DNA analysis has become an essential intelligence tool in the criminal justice system for the identification of possible offenders'. DNA samples from crime scene for forensic data can be easily collected from cigarettes, used utensils, bloodstain or saliva. After, collecting DNA samples forensic experts figure out the DNA sequences from DNA fingerprinting machine then match it with the following victim or culprit. Due to the advancement and growth of IT, It is easy to find out the criminal data from records digitally. DNA forensics deals with different methods that include DNA Analysis process of selected samples, DNA Extraction and quantification and DNA Profiling. We have concluded that the science and technology has reached at its peak to discover new but sometimes this vast knowledge and access of technology leaves a harmful impact on the society which results in Cyber Crime such as Hacking, Data stealing, etc. So, we come up with the use of methods of Forensic Science and for further precautions we should be very careful with the court of laws.

Keywords: Cyber Crimes, Database Forensics, Digital Forensics, DNA, Hacking, and Network Forensics.

Anomaly Detection in Social Networks using Deep Learning Embedding Approach

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Attributed networks are pervasive and constitute a crucial element of advanced technologies, where node attributes augment the network structure. Identifying abnormal nodes on attributed networks has gained significant research interest recently. Anomaly detection in attributed Social networks sought to discover nodes whose patterns substantially differ from the rest of the nodes. However, it persists as a concern because of the complex description of anomalies and heterogeneous nature of the available attributes. Attributes and Structural information generally tend to be associated with each other, making it hard to decide who has larger role for shaping an evolving network model. Most current approaches ignore dynamic interactions between network topological information and attributes of the node. We introduce a joint representation learning system for detecting anomalies through a deep autoencoder by doing decent-quality embeddings while considering complex relationships between topological structure and node attributes. Structure autoencoder and an attribute autoencoder are used for embedding both nodes and attribute jointly in embedding space. Also, the attention approach is used in the structural encoder that is critical to the detection of anomalies. Dynamic interactions between topological structure and node attribute are observed during attribute reconstruction. At last, Anomalies can be identified by evaluating node reconstruction defects from the structure and attribute viewpoints. Substantial tests on attributed network datasets from the real-world show our proposed method's effectiveness.

Keywords: Attributed Networks, Social Network Anomaly Detection, Deep Autoencoder, and Network Embedding.

Anomaly Detection Techniques in Online Social Networks: A Critical Review

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Anomaly Social Networks are rapidly becoming a part of our everyday activities. Anomalous activities in the social network represent unusual and illegal activities exhibiting different behaviours than other presents in the same structure. Due to the popularity of social networking sites such as Facebook, Twitter etc. many malicious activities like harassment, fraud and bullying have increased in recent past. In the OSN, two types of data inferred, first is behavioural data, it depends on the effective behaviour of the users, and second is hierarchical data which includes network structure. This article reviews multiple anomaly detection approaches currently being used in the domain of social networking and presents a detailed comparison of their various aspects. On the network structure basis, anomalies type to be encountered, and the method of anomaly detection, we have categorized the existing approaches. We portrayed anomalies as either attributed or unattributed and as static or dynamic, by studying some predefined procedures to detect these types of anomalies. We found that there are two sub-processes in online social network anomaly detection, one is network features identification and calculation, and the other is observation analysis of these network features.

Keywords: Anomaly Detection, Social Network Anomaly Detection and Anomalous activities.

Cyber Attack in COVID-19 Era

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COVID 19 pandemic disrupted the life of entire world and alter the livelihood of billons of citizen across globe. This pandemic governs a new-normal in the way citizens live and work. Apart from colossal impact in society, this pandemic agape doors for cyber criminals that affect business, society and individuals. Pandemic gateway peaks the likelihood cyber-attack implementation and expand range of cyber-attacks to ditch naive spears citizens. In this pandemic, cyber-attack increased from 5000 attacks per week to 200,000 per week and till the end of June, 34% increase in all types of attacks are observed, this reflects how alarming

situation is for entire world. In this paper we focus on analysis of Cyber-attacks from COVID-19 perspective and elaborate the range of attacks expanded globally during the same. In order to barricade cyber-attack, it's essential to discern modus-operandi of cyber attackers. This paper delineates cyber attackers and elaborates impact of individual attack on citizens. Later we analyze the initial outbreak of pandemic in China and explosion of cyber-attacks over the world. Lastly, it is observed that many security challenges were there which need to be come in attention.

Keywords: Cyber-attack, Security, COVID-19 and Pandemic.

Issues and Challenges in Security Testing of Web Based Applications

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As web systems are more complex, security testing has become important and a crucial activity in the development life cycle of web applications. The security testing aims to keep the data confidential, to search for information leakage and to keep it as planned. It verifies that web applications meet security criteria when malicious input data is subjected to them. The growing proliferation of security vulnerabilities means that its specific challenges and problems must be recognised, which ultimately provide the security testing tool to developer and test managers with valuable feedback on their respective projects. The author addresses in this article the description and various security test forms including methods and tools of the investigation for basic software development processes. This paper also explores steps taken by the team members to ensure the security of their applications, how developer security knowledge influences the processes and how security fits in the development workflow. Security can be checked at initial level by taking inputs so that loopholes can be found and the propagation of vulnerabilities can be prevented. At the requirement phase security can be filtered and then in the next phase designing artefacts can be inspected for security error. A metric is developed that grades the programme in the test and secures it at the correct stage. Finally, we present some open issues and research opportunities to ensure software security and trustiness.

Keywords: Security Testing, Vulnerabilities, and Web Applications.

Cyber Forensics – Physical Systems: Upcoming Aspect

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Physical systems are being connected the physical world towards the digitization which means smart world of Internet of Things (IoT) devices and systems are interrelate in million and billion ways. The usage of Internet of Things has grown up exponentially. However, it increased the significant risk of cyber-attacks, which leads to big loss in critical infrastructures that provide important services such as electronic communication, energy, banking and finance, critical public services, health services. Transferring data over the network without any restriction brings question on digital forensics, where physical systems are also vulnerable to security attacks and criminal activities. Where general purpose of application as well operating software is attacked or infract, digital criminal investigation will involve in analysis of operations, access logs, tracking traffic sources and finding out how it was done, who is responsible and last but not least the purpose behind it. Forensics endeavor also use critical information and additional software operational information create defense mechanism for such attacks. As the applications of physical systems are rapidly being developed and assuring its deployment in various critical domains, different security measures are considered to protect them. Along with these security measures, it is also important that physical systems too include effective capabilities of forensics. These are condemning, yet difficult to carry off, when attacks are detected and investigated to find the criminals and diminish the damages are needed. We will try to offer an overview of forensics in physical system and the challenges of adopting different techniques. The motive is to help in summarize of possible solutions using various approaches for improve and more effective forensics operations in physical system. Forensic problems and solutions were investigated in various emerging areas. Some example of these areas are smart phones, internet of things, cloud computing. These examples usually enabling technologies for physical systems. Moreover, major differences between forensics of physical systems and other technologies are mainly cyber/digital type, on the other hand physical systems operations depend on the utilization of the feedback and convolution. This also affect the method through which forensic data is collected and reserved for analysis. Major advances in physical system design and development in critical infrastructure allowed for confidential and very effective ways to accomplish the objective of

physical system. Yet, this also increased security risk as physical systems are growing & become integrated into physical operating environment. Securing physical system is huge challenge and above all, performing forensic analysis is also a big challenge. As a result, motivation to complete this study is to outline forensic efforts, identify the challenges and the main goal is to offer researchers and developers an overview of these challenges, provided the vision of forensic approaches, what is currently being done and vision for possible forensic approaches.

Keywords: Cyber Security, Cyber Forensic, and Security Threats.

A Brief Survey of Challenges and Applications of Social Computing

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Social computing is largely the use of the Internet for social functions together with networking, sharing interests, and private insights. It is being followed with the aid of using industries and governments. This represents the following degree in net development. Current studies in social computing encompass many disciplines together with statistics systems, politics, business, and technology. People are concerned about social computing and have interaction in a wide spectrum of social and industrial activities. In much less than three decades, three essential paradigms of social computing like groupware, cellular social software programs, and social software programs have emerged. Social computing systems are speculated to be now no longer just like content material distribution and conventional computing. There are a few decided on socials computing systems together with YouTube, Face book, and Twitter, etc. Being a dynamic and evolving field, the usage of social computing is developing rapidly. Social computing is turning into essential in people's lives today. It has made an effect in the media industry, education, healthcare, non-public identity, and authorities' services. A utility of social computing is net-primarily based totally and it's far designed to put into effect and aid to collaboration and communication. Recently, social computing advances have supported real-time programs together with videoconferencing. As social computing technology ends up widespread, many demanding situations arise. In this paper we have discussed about the challenges and application about social computing. Challenges consist of statistics overload, decision-making, privacy, security, trust, and risk.

Keywords: Social Computing, Groupware, and Healthcare.

Cyber Crime: Challenges in Detection and Prevention

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Currently one and all are moving towards the era of digitization and networking, which undoubtedly brings assorted benefits in different fields such as ecommerce, communication and so on. It also increases the new criminal methodology, generally known as cybercrime. Crime that involves a computer and a network is known as cyber-crime. Offences that are committed against individuals or groups of individuals with a crime motive to intentionally harm the reputation of the victim or cause of physical or mental harm, or loss to the victim directly or indirectly using modern telecommunication networks such as internet (E-mail, Facebook etc.) and mobile phones (Bluetooth, SMS, etc). The corona virus pandemic, internet has become an essential service for everyone to stay connected which gives increase to concerns against the cyber security attacks. In previous year 2019, the US was the most attacked nation in the world. However in the second quarter (March, April, and May) India surpassed the US, the report states. India scored 15 in the 2019 ranking and moved up to 18 in the 2020 rankings by Comparitech, UK. India has faced a lot of cyber-attacks, a recent cyber-attack in India 2018 was deployed on Cosmos Bank in Pune. This daring attack shook the whole banking sector of India when hackers siphoned off Rs. 94.42 crore from Cosmos Cooperative Bank Ltd. in Pune. The type of cyber-crime is Hacking, Cyber Stalking, and Denial of services, Malware, Virus, Worm, and Trojans. If there is a problem, that will be the solution as well. The solution is Digital Signature, Encryption, Security Audit, Cyber forensics. This solution is not 100% effective but a simple solution that we should do. It will keep the data secure. There are many laws and measures which are framed and have been taken in order to prevent these crimes such as IT ACT 2000, National Cyber Security Policy. Already, the government has launched a scheme which we know by the name of I4C (Indian Cyber Crime Coordination Centre). The scheme to set up the Indian Cyber Crime Coordination Centre was approved in October 2018 by the Ministry of Home Affairs (India). It was inaugurated in New Delhi in January 2020 by Mr. Amit Shah, the Home Minister of India. The Indian Cyber Crime Coordination Centre (I4C or ICCCC) is a government initiative to deal with Cybercrime in India, in a coordinated and effective manner. It is affiliated to the Ministry of Home Affairs, Government of India. This scheme comes under the central

government but at the Ministry for home affairs (MHA), 15 states and union Territories have given their consent to set up regional cyber-crime coordination center at their respective regions. First Cyber Crime Prevention Unit of India **"**AASHVAST**"** in Gandhinagar **(**Gujarat) launched by The Union Home Minister Mr. Amit Shah on January 13, 2020.

Keywords: DoS, Cybercrime, Telecommunication, Pandemic, and Cyber Stalking.

A Brief Survey of Application Domain in Social Computing

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Social computing refers to the use of computational devices to facilitate social interactions among many users. Social computing fulfills the needs of resources for the interaction of users on social networking platforms. It established an interrelationship between social behavior and computing system for creating social conventions through software and Internet technology. Various social computing applications such as blogs, email, social networking (e.g., Instagram, Facebook, Twitter) are widely popularized where people interact socially. In current scenarios, a lot of Government organizations, business companies, and many other organizations are adopting social computing technologies in various social computing systems such as Facebook or Instagram modeling support of social behavior and context are very important. It also changing the behaviors of users and their lifestyles. Various social networks have become more and more popular. In this paper, we will discuss the Research issues related to social aspects, and network dynamics. We emphasize the area where social computing may offer insights for recommendation disciplines. Social Computing and communities which are online have accompanied in a new era of the web, where information and communication technologies are ease organized human attempt in fundamentally new ways. The wide effect of social computing in diverse dominion and the complexity of features that span multiple disciplines pose new and different challenges for Information Systems (IS) researchers. Information Systems research should enlarge its scope and adaption of theories and methodologies from even more disciplines to address this challenge. This phenomenon has various theoretical connections and bridges social and technical aspects. Thus, it offers an ideal opportunity for IS researchers to take the lead in demonstrating the center of attention of IS in cross-disciplinary research and emphasizing

praxis. We outline the main attributes of social computing as a predecessor to discussing research challenges.

Keywords: Social Computing, Social Networks, Social Media, Social Software, and Social Behavior.

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Track 2
Computer Vision and Image Processing

In The Era of Deep Learning: Medical Image Processing.

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Deep learning has been gradually extended to medical imaging, in specifically convolutional neural networks. This growth has been fueled by advancements in hardware combined with the availability of increasingly large data sets. The outcome surpassed assumptions. Yet throwing traditional machine learning and image processing methods aside will be premature. Each deep learning technique comes at the expense of very large quantities of data being required. The flexibility of traditional manually configured properties combined with deep learning is explored. The approach of combining traditional imaging techniques with deep learning would achieve outcomes which are significantly higher as compared to those produced in isolation from each learning system. In this article, we address the advancement of deep learning in the processing of medical imaging, as well as the evolving application of learning techniques. We address the monitoring tipping point as well as the conditions that support the function of hybrid techniques in histopathology and quasi-histopathology.

Keywords: Deep Learning, Convolution Neural Networks, Image Processing, and Transfer Learning.

Geofencing Attendance System Model Using GPS

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Geofencing is a term utilized basically in the corporate world that alludes to the act of restricting versatile workers to a particular geographic area by following their whereabouts by means of the innovation of a worldwide situating framework (GPS).This is particularly profitable where an armada of followed gadgets are utilized inside an organization and exceptionally helpful in the multinational companies in essential security as this can be applied there if a employees moves out of the geofenced limit the alarm message would be conveyed to their Boss. This paper Describes the design and development approach of the hardware Geofencing device and circuit

using Arduino-uno and GPS Sensor that enables the latitudinal and longitudinal parameters of a employee and indicates that whether he/she is in the respective geofence or not.

Keywords: GPS, Alarm Message, and Arduino-Uno

Argumentation Mining: Classification and Detection of Arguments in Texts

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Argumentation Mining is the understanding of the human language by the machine which is quite a challenging task from the perspective of a machine. Argumentation is a discourse activity that's aims at increasing or decreasing the acceptability of a controversial claim or point of view. It is an intelligent communication task that is inherent to human behavior. Arguments are revealed by the discourse markers present in the natural language but many a times such markers give ambiguous meaning or are absent. Moreover, the premises in the favor of the claim are far away to make a claim in which scenario it becomes difficult to make a conclusion by linking them together. Argumentation structures also take the form graphs many a times where nested tree structures are present. In such scenarios we humans recognize such argumentative discourse by our understanding of the world or in more subtle terms, common sense or the domain knowledge which a machine does not possess. Argumentation Mining is the branch of Artificial Intelligence research area which deals with the extraction of arguments occurring in natural language and their relation from text with the final aim of providing machine-processable structured data for computational model of arguments. The main objective of argumentation mining is to extract arguments automatically from generic textual corpora, in order to provide structured data for computational models of argument and reasoning engines. In this paper we will analyze the current research scenario in Argumentation Mining and the methods developed for successfully extraction of Arguments from the text.

Keywords: Artificial Intelligence, Human Intelligence, Corpora, and Argumentation Mining.

Magneto Anti-Carcinogenic Therapy: Identification and Cure of Cancer Cells Using Emulated Sequentially Programmed Magnetic Field (eSPMF) therapy

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Magneto Anti-Carcinogenic Therapy done through Emulated Sequentially Programmed Magnetic Field (eSPMF) therapy is need of future Cancer Therapeutics Technology. It is evident that Cancer tumors after a certain stage are hard to be cope up with. Cancer cells are hard to be detected due to similarity in properties with respect to that of normal cells. To find out the possibility of detection and cure of these cells artificially using the said mechanism of electromagnetism is a big challenge at present. There are scientific proofs stating the fact that Transmembrane potential of healthy cell is about 80 to 100 millivolts while that of cancer cells is about 20 to 25 millivolts. Due to these voltage difference in diseased cells membrane channels function ineffectively leading to domino effect of disease-causing actions or inactions. These difference in potentials leads to further difference in magnetic field generated by cancer and healthy cells which can be used in detection of cancer cells using sensitive magnetometers like SQUIDS (Super conducting quantum interference detectors) and SERF (Spin Exchange Relaxation free). If a current would be induced in these cells to increase their respective Transmembrane potentials to 80-100 millivolts, they may reveal us with lower carcinogenic properties and higher healthy cell properties gradually leading to cure of cancer. Current Induction would be achieved through application of programmed and sequentially generated magnetic fields in targeted mannerism which is called as Emulated Sequentially Programmed Magnetic Field (eSPMF) therapy. Mechanism of eSPMF applications in plants like 'touch me not' (Mimosa pudica) initially is proposed for experimental proofs. Further, experimental approach to test the hypothesis would be a validation of proposed model.

Keywords: Anti-Carcinogenic, Emulated Sequentially Programmed Magnetic Field (eSPMF), and Cancer Therapeutics Technology.

Role of Satellite Images in Estimation of Locust Swarm Infested Areas during COVID-19 Pandemic in India

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The locust invasions ranging from Africa, Arabia and India during the ongoing covid-19 pandemic has been one of most critical issue occurred in the year 2020. The desert locus swarm formations affected vegetation which resulted in devastation of crops. The precipitation levels in these ranges due to the increase in rainfalls deteriorated the situation further enabling more regions for locusts breeding. In August 2020, the locust swarm infection spread over 92,000 hectares of lands in the Near-East regions of Oman for which the country's locust control unit carried a combat operation by spraying pesticides. The recent cyclones in Arabian Sea with prevalent winds contributed large migration of the locust swarm. The MeT department of India informed that it has exceeded rainfall by 25% between the months of March and May and the temperature levels did not rise as expected. In November 2019, the locust migration cycle started in Gujarat and Rajasthan state of India. The early migrations of locusts caused their exponential population growth and intensified the difficulties for the farmers and the government. This was the biggest savagery locus attack since 1994 and the total loss in these Indian states were estimated to be between 5-6 crores rupees. The condition worsened when these swarms damaged the crops during covid-19 pandemic situation. Nearly thirty lakhs hectares of infested areas were sprayed by mounting the spray devices on the vehicles such as tractors. This task was very challenging due to the covid-19 lockdown. The Locust Management in India has well-described preventive, proactive and reactive methods to deal with the situation. A single desert locust swarm are ravenous eaters and their daily food intake is equal to the quantity normally consumed by 2500 people. They can sense places with moisture and greenery easily and are extremely adaptive to different locations. Hence, this research also addresses one of WHO's sustainable development goals "A world without hunger" by proposing to develop a unique early warning and prevention system. This would comprise of innovative methods to detect and monitor the swarm locations. The use of innovative technologies such as Geographic Information System (GIS), Global Positioning System (GPS) and high resolution satellite imagery can detect changes

in vegetation caused by these insects and address the condition with an effective intervention. The collaboration of drone technology can provide additional support to identify affected vegetation patches and spray pesticides in vast deserts and mountainous regions. The Malathion organophosphate insecticides are very effective against locusts and can be sprayed by using the drones as embedded device of the proposed system. The clearance of infested and the breeding areas requires the control operations to procure appropriate equipment, train the staff to have expertise along with clear guidelines. The proposed system with the integration of satellite images can help to identify hotspots and analyse the trends to forecast by story mapping and eventually contribute towards addressing the risk of large swarm formations. The proposed system would also update the contingency plan regularly and provide detailed reports of the situation to predict future trends for necessary actions.

Keywords: GIS, GPS, Satellite Imagery and Early Warning and Prevention Systems.

The New Age of Face Recognition and Their Concerns

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It's cool to have a face recognition lock on our phone that allows us to unlock the phone in a matter of seconds, but when we get to know that our facial expression is registered in a database for various purposes, it becomes a threat to our privacy, including controlling crimes, tracking your everyday internet browsing, steal data. Some researchers consider facial recognition as a danger to our obscurity, which is the idea that when it's difficult to obtain and understand, personal information is safer. But the Russian search engine "Yandex" comes with the next level of technology in the modern era of biometrics, where people can enter a face and search for a name. Now we can't decide who we should introduce ourselves to or who we don't want to introduce ourselves to. Facial recognition software works like a human brain First its capture your face with a photo or videos (it happens in real-time) then the software measures a variety of facial features called landmarks and nodal points on the face these could include the distance of eyes, the width of the nose and the depth of the eyes sockets and the shape of a chin, each program uses different nodal points and may collect up to 100 different measurements. This information is then converted into Mathematical algorithms that represent your unique facial signature. Then compared with the thousands of Known Faces in the database and fetch the right

data, this happens in a matter of seconds. It's Becomes More accurate because of Artificial intelligence advances in deep learning and faster system for processing in an enormous amount of data that helped the technology come closer to reaching its full potential.

Keywords: Facial Recognition, Biometric identification, Privacy, Cyber threat, and Cyber Stealing.

Satellite Image Quality Assessment in Big Data Repository Using Big Data Analytical Techniques

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Satellite images are an important source of Earth surface observation and object identifications,a single satellite generates several terabyte data per day which means a single satellite creates the huge amount of data to be analyzed. Many online satellite images repositoriesare available which contains a wide variety of images with different resolution, where some images may be effected due to weather condition and cloud covers or electromagnetic interference. If user wants to process an image then the first requirement of the user is to find out the less effected and accurate satellite image, which can produce a reliable result. The satellite images repository holds multiple years of images, which are continuously increasing day by day so the repository act as big data. The basic characteristics of big data are: Volume, defines the amount of satellite data which are collected from various sources, Variety, decribes that the satellite images generated from various sources like radar, optical and thermal sensors with multi-temporal, multi-resolution and multi-spectral resolutions, velocity, explain the growth rate of increment of the satellite images in the database. In this study, a feature based image retrieval (FBIR) system has been developed, which utilized the big data analytical techniques for qualitative image retrieval. Color features are used to assess the images from repository and KNN algorithm is used to compute the similarity between retrieved color features and stored color features in the repository. In future, FBIR may be useful to retrieve the less affected satellite images from the repository for further processing to produce the reliable result for efficient interpretation and analysis.

Keywords: Image Features, Big Data, Satellite Images, and KNN Algorithm.

Impact of Rapid Urbanization on Land Surface Temperature Rise by Using Satellite Image

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Studies on urban thermal environment are now attracting wide interest among all to study the impact on environment of the recent advancements. With rapid urbanization, there has been tremendous growth in population and their modifications which is leading to drastic reduction in greenery for the sake of advancement. Urbanization has become one of the most important human activities that is modifying the Earth's surface temperature. As more number of people are migrating from rural to metropolitan areas and that is affecting land surface temperature. This modification on land surface is resulting in urban climate change. Urban development can profoundly change the urban landscape structures and urban thermal environment. The difference between the rural area temperature and urban area temperature is quite observant. The aim of this study is to observe how the dynamic change in the urbanization effecting and surface temperature (LST) which is a fundamental parameter on both regional and global scales. For a better living standard people from Rural areas are looking in the direction of the Urban Areas that seems promising to them in terms of providing better healthcare, education and job opportunities but that movement significantly is increasing the Urban area cover either horizontally or vertically. The core of the city is becoming warmer than its periphery. There is need to closely observe that how the temperature in some dense area of the cities which is devoid of any vegetation around, or is in the heart of the city have considerably more than to the areas which are a bit away from the main areas of the city or have some vegetation around it. At present, more than half of the population is living in urban areas such as towns and cities. If we look at Lucknow then in the current year metro area population is 3,677,000, a 2.42% increase from 2019. From addressing the challenges of COVID-19 and rising urban populations, demands on cities are growing. All this resulted that spatial distribution of land surface temperature was affected by the land use-land cover change and anthropogenic causes. The joint use of synthetic aperture radar (SAR) and multi-spectral sensors has shown to be powerful tool for Earth observation. The main objective of this study is to access the factors promoting the rise in land surface temperature. By this research we can improves our understanding of the impact of

urbanization on the change that it may cause on the local temperature of the area apart from that it will be helpful for policymakers to formulate counter measures to help in maintaining the land temperature accordingly, to plan the urban area in such a way that temperature of the cities should not exceed an optimum amount by incorporating green cover in and around the city.

Keywords: Land Surface Temperature (LST), Satellite Images, and Rapid Urbanization.

Drone Based Surveillance for Public Safety

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Drones are Unmanned Aerial Vehicle (UAV) mostly remote-controlled, which has taken over the UAV utility to the next level. Drones were introduced during World War II by Reginald Denny mainly to serve the purpose of surveillance for the U.S Military. Several types of research have been conducted over the decade which has transformed this technology to serve not only the purpose of military surveillance but for entertainment and public safety as well; however, these researches are limited to the traditional techniques and methodologies used in the technology. According to Francesco Castellano, 70% of the drone market is covered by the Military, followed by commercial and consumer usage 13% and 17% respectively. The worldwide commercial drone sales are expected to be $6.4 Billion by 2026 whereas the small drone market is expected to reach $40.31 Billion by 2025.Drones are readily available with live cameras preinstalled which can be used with the help of remote control or a Smartphone. Police and various defense services are now using drones to monitor heavily crowded areas and sensitive areas using the live cameras integrated into them; however, the live camera technique of visualizing threat can now be replaced by Artificial Intelligence. The concept of Armed Drones has existed and is being used by the Military for decades. These armed drones can transport or deploy explosives such as missiles, and other war machinery, on the battlefield and can come into handy in severe operations where humans can be replaced by drones. This will not only save the lives of the soldiers but also increase the pace of the operation. In the movie-Spider-Man: Far From Home(2019), the concept of Killer Drones has been depicted where drones are programmed to follow an object using Artificial Intelligence and destroy it. These drones are controlled by VR Remote control devices that use Virtual Reality and Augmented Reality techniques. These drone cameras, if integrated with certain IoT technologies such as

thermal imaging and motion detection, can be helpful in surveillance in the public domain. We can create heat maps using thermal imaging in drone cameras to detect the behavior of entities such as humans, machinery, and landscapes. The heat maps generated in areas like Factories, Parks, Hospitals, Malls, Hill Stations, etc. can be used to detect any unwanted behavior in humans, machinery, and landscape. By using the data collected by drones, public safety personals can act accordingly and maintain a safe environment. The data collected can also be used to formulate geographical models and maps with the help of Augmented Reality (AR technology). These maps can be useful in situations like landslides or fire breakouts. This study revealed that there are several unexplored methods which can come in handy in Drone-based surveillance in the domain of public safety. Be it a dessert or a crowded market, Drones are cheaper, smaller, and lightweight in comparison to aircraft, which makes them suitable for surveillance anywhere. This technology can be helpful in landslides, fire breakouts, floods, thefts, traffic violations, terrorist activities, and other emergencies. The Heat Map technique we discussed above can come into handy in surveillance in low light or at night, thus Drone technology is the future of surveillance.

Keywords: Unmanned Aerial Vehicle (UAV), Drone Images, Artificial Intelligence, and Heat Map Technique.

Similarity-Based Neural Network Model for Feature-Based Satellite Image Retrieval System

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Satellite images are a major source of Earth observation, and also helpful for man-made and natural resources monitoring. Multiple satellites are functional in orbit and producing many images on daily/weekly basis for the interpretation, analysis and monitoring of the land surface. Satellite images are the major source of data and information that is used in various fields such as environmental impact analysis, agricultural monitoring, forest survey, and urban change detection, etc. Many satellite images retrieval systems are available which providing a wide variety of images with different resolutions (spatial, spectral, temporal) for earth surface monitoring. The image retrieval system has an image repository that contains a variety of images. In the repository, some images may be affected due to weather conditions and cloud

covers. The effected images are not suitable for post-processing because they cannot produce an efficient result for interpretation and analysis of earth surface monitoring. While working with satellite images, it is necessary to search an image from the image repository that can produce an efficient result for earth surface monitoring. Retrieval of noise-free image from image repository and extraction of meaningful information from the image is still a very challenging task especially when the image shares multiple semantic information. In brief literature review, it is observed that many researchers have developed various neural network-based models for satellite image retrieval systems but their performance is not efficient. It is also observed that many neural network models have been developed using similarity measurement techniques that are capable to find similarity between two patterns, but find the similarity between two satellite images is a complicated task because satellite images refer to the typical datasets. A satellite image has multi-spectral bands, and each band contain some specific hidden information hence extraction of feature from an image and search the similar image in image repository using extracted image feature are very crucial. In this present study, a similarity-based neural network (SBNN) model is developed for feature-based satellite image retrieval system which may beneficial to identify that images are similar or not. The proposed feature based image retrieval (FBIR) system uses the query image features for searching similar images of it from the image repository for retrieval. During the similar image search, the query image features will be matched with all features that are stored in the feature database for finding similar images of the retrieved image, and the process of image matching done by similarity measurement (distance measurement) algorithm. A distance measurement is the underlying property of similarity-based neural network model, and the model relies on self-organizing maps. However, a distance measure implies some requirements on the data which are not always easy to satisfy in practice. In future, a similarity-based neural network (SBNN) model can be used for big data repository to find out the best suitable images for land surface monitoring.

Keywords: Satellite Images, Similarity-Based Neural Network (SBNN), Similarity Measurement Algorithm, and Image Features.

Agricultural Decision Support Systems Processing and Application of High-Resolution Imagery

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Decision Support Systems (DSS) give a framework for desegregation direction systems, analytical models, and graphics, so as to enhance decision-making method. Network thought was extended to the abstraction context by desegregation GIS and DSS into abstraction decision support systems (SDSS), attributable to lack of laptop computer code to develop user friendly interfaces within the past, GIS haven't been used as a part of SDSS. Instead GIS are accustomed generate and store abstraction knowledge that were then used as inputs for the analytical models. GIS was used severally to show maps by inputting results of the analytical models. A lot of analysis has been done on the utilization of GIS within the mental image of the results of the analytical models. Developing user friendly graphical interfaces in incorporating analytical models into GIS to attain SDSSs is one in every of the active areas in agricultural management. Some such examples area unit mentioned during this paper. Exactitude farming, a mix of GIS, GPS receivers, continuous yield sensors, geostatistics and variable rate applicators is an innovative approach to follow of property agriculture. The opposite SDSS applications mentioned during this paper area unit on watershed management, crop productivity management and policy call analysis.

Keywords: ICT, Communication, and Geo

Role of Information Technology in Plant Diseases Detection and Management

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Agriculture in India is nowadays improving with the technology. Now, the government of India is giving the priority to doubling farmer’s income. Due to interaction of technology or

information technology industry, it has become possible to do some technical and computational processes quickly. With the help and use of technology many processes in agriculture are becoming quick and came out as very popular system in agriculture. The technology can add more easy entities in agriculture field. With the use of machines or hardware like, the Tractor, the Motocultor, the Rake, Machete, Escardilla, Shovel, Peak, Wheelbarrow, the Harvester, plow tractor, the Harrow, Sprinkler, seeder and fertilizer, Baler etc. are the hardware instruments which are making hard and time-consuming work easy and quick for the farmers. But these instruments need to operate manually. If farmers did the plantation of some plants and then on plant's fruits or leaves found some diseases. So, if farmers want to know about these diseases and find the solution of it then it takes more time and peoples involvement in it. This paper is dealing with find diseases name and proper solution for these diseases from Experts, Subject Matter Specialist (SMS) and scientist.

Keywords: Agriculture, Information Technology, Plant Diseases, and Scientist, Plantation.

An Accurate Study of the Quality of Health Coinciding with the Process of Handwriting

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Nowadays, it is very common that people are facing one or other kind of depression and are not even knowing it. Researches show that handwriting cannot only help in identifying a depression patient but can also be a crucial factor to improve personality. Handwriting can also reveal if a person is having any kind of disease and can detect fatal diseases such as cancer, Alzheimer, tumour even at an early stage. Generally handwriting is processed through some machine learning concepts. It is very sensitive approach to observe each curve that is made. Every single stroke and straight line can be the factor of depression or key to measure the level of a deadly disease. Most of the time researchers use NLP to notice subject's depression level. Previous studies show that it is dangerous to ignore depression from the beginning. This research is based on this. In this paper , all the key factors are explained and proposed a model to detect health issue and improve them through handwriting which is also known as graphotheraphy.

Keywords: Graphology, Handwriting Analysis, Handwriting Feature, Personality Traits, Depression, Health Issues, and Graphotheraphy.

Track 3
Distributed and Collaborative Software Engineering

A Review on Optical Burst Switching

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In this paper an emanate technology Optical Burst Switching is discussed. The abundance of bandwidth brought about by the introduction optical fiber has resulted in a lot of research of optical switching paradigms. OBS networks are new field to Optical area and researchers have done a lot of studies on different functions of the switching technique. This paper compares preexisting optical switching paradigm as OCS and OPS with the OBS. OBS is regarded as the best solution as it has the advantages of both OPS and OCS, and eliminates their disadvantages. The OBS network architecture is explained. It explains the different functions of optical burst switching system as Optical burst assembly, Routing and wavelength assignment, burst scheduling and contention resolution. The numerous advantages of the OBS network architecture are listed. In the OBS paradigm, only a few control channels (e.g. one per fiber) go through O/E/O conversion. Given that the data is switched all-optically at burst level, data transparency and statistical multiplexing can be achieved concurrently. OBS is necessary for future development of communication network. The number of internet user increases exponentially as per recent development of bulk data transmission through the optical fiber network. Several issues are under study and some other has been successfully addressed. In particular, issues of pivotal importance include the development of burst assembly algorithms, efficient signaling protocols, routing and wavelength assignment, scheduling, and contention resolution schemes as well as quality of service provisioning mechanisms etc.

Keywords: Optical Burst Switching, Optical Network, Burst Assembly Algorithms, Efficient Signaling Protocols, and Communication Network.

Road-Map To Full Stack Web Development

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The most important thing to considered while developing a top-notch web application is the relevant tech stack. Web development can be defined as the building and maintenance of

websites for hosting over internet or intranet. It's all about creating web pages or web applications that run in a web browser for providing users seamless with a interface. It is a fast-paced field, with several programming languages, frameworks and databases for providing variety of functionalities that are seemingly arising every now and then. Traditionally it has three layer: Presentation layer (front end which involves user interface), Business logic (back end that deals with data validation) and the database layer. But in this fast-paced evolution of Information Technology, having the knowledge of only one is quite outmoded. The new era of full stack web development is arising fulfilling all the demands of both front end and back end. The word "STACK" in software engineering terms to complete set of technologies that companies are using to build an advanced web application. It includes one or more programming languages, libraries, servers, databases, frameworks, and developer tools. As the web has grown more complex and as more things are now possible on Internet, developers have gotten more specialized. So, now we are shifting towards full stack developers who are proficient in working across multiple stacks of web. The full stack development knowledge includes Front end (the visible parts of a website or app), Back end (the "under the hood" databases and infrastructure) and Full stack (a hybrid of both). Full stack can be applied to a web stack, mobile stack, or a native application stack (i.e. software programs for specific devices). Each layer of the app is built atop the one below, forming a stack. This makes technologies heavily dependent on each other. There are some popular web stacks like MERN, MEAN, LAMP, Djangoand with the features of AI they are providing a better inventory management, improvised visitor interaction, and a personalized user experience. Full stack development assists developer to build websites by easily switching between front and back ends which further reduces the complexity of development and communication within team. Thus the technology stack powers a web product and not only it bring it to life but stand for its further maintainability, scalability, and many other factors.

Keywords: Web Development, Full Stack, Web Stack, Artificial Intelligence, and Framework.

Estimating and Predicting Software Reliability through a Novel Approach of Deep Learning

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In determining the quality of the software, reliability is an essential question. The prediction of reliability is a mathematical procedure that aims to assume future values of reliability based on known data during development processes. In the past four decades, various software reliability models, such as parameter and non-parameter models, have been developed to evaluate software reliability in the testing phase of software. While these models can efficiently evaluate software reliability in some testing environments, under all testing conditions, no single model can reliably predict the fault number in software. Modern software is built with more sizes and functions, in particular, and it is a surprisingly difficult job to determine software reliability. Over the past 40 years, researchers have built several software reliability parameter models to test software reliability, such as those based on stochastic differential equation, non-homogeneous process Poisson, and Bayes process. While these models can efficiently evaluate software reliability in some testing environments, under all testing conditions, no single model can reliably predict the fault number in software. The conventional statistical approach is being replaced by intelligent reliability computing techniques to minimize these limitations and has shown an excellent increase in the expectation of software reliability in recent years. Authors have suggested a new technique for predicting software reliability by the use of a model based on deep learning along with fuzzy logic. For reliability prediction, neuro-fuzzy models are the most widely used soft computing models. The use of deep learning neural methodology provides very accurate results and eliminates the complexity of data along with this fuzzy logic. The results of the study indicate that this hybrid strategy is better than other approaches to soft computing for prediction. The outcome contrast is presented to illustrate the improvement of the method. For the application software dataset, the recently established deep learning model, called the deep neural network (NN) model, has adequate forecast results.

Keywords: Software Reliability, Neural Network, Fuzzy Logic, Deep Learning, and Prediction.

A Survey on Potential Problems in Software Security

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Information, no matter to which part of the globe it belongs to, is available in a click of the mouse. Intensive security-oriented services ranging from internet banking, trading to online buying and selling, etc. are carried out unhesitatingly. These services require the privacy of the information and asset. When security intensive information is floating everywhere, anyone having malicious intent can misuse the information. To protect software against malicious attack and other hackers, Software security risk management works. Software security management aims at ensuring proper protection of software. Software security risk management techniques are incorporated to deal with threats and vulnerabilities that impose risks to these assets 'software security properties. Most organizations have a firewall, antivirus software, and intrusion detection systems, all of which are intended to keep attackers out. Bad software lies at the heart of all computer security problems. However, firewalls, cryptography, and antivirus protection address the symptoms, not the root cause of most security problems. Secure software is about mitigating risks from assets to achieve business goals. Security is highly dependent on the context where software is deployed. But measuring software security even within a specific context is still not mature. This is because properties and metrics for measuring security are not adequately defined, and methods are lacking to provide a complete picture for measuring software security. So, there is an urgent need to develop a security framework that is incorporated from the beginning of the software development life cycle.

Keywords: SDLC, Firewalls, Cryptography, Software Security.

Exploring Potential Problems with Information Security Risk Management

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The modern world is critically reliant on a broad range of software systems. Dependency on computers is so high that life cannot be imagined without them. With all the advantages of computers and the software running on them, there is fear too. This anxiety is in the form of software vulnerabilities that vulnerabilities are the defects that are introduced during the development of software. In most cases, "compromising in design" is one of the critical security risks that make vulnerable to the system. The presence of even a single vulnerability may cause irreparable loss to the organization in terms of money and reputation. When one talks about improvement, a question comes to mind that up to what extent a particular approach can improve security. Security is a crucial property of any software; it's time to build intensive security for software. Intensive security-oriented services ranging from internet banking, trading to online buying and selling, etc. are carried out unhesitatingly. These services require the privacy of the information and asset. When security intensive information is floating everywhere, anyone having malicious intent can misuse the information, which may harm an organization or individuals. In addition, the nature of software is becoming more complex day by day, and the need for security is increasing in every field. Assessing and maintaining the CIA (Confidentiality, Integrity, and Availability) during software development stages is proved to be one of the best ways to get more secure software. Security in the software must be incorporated to secure software development from the very beginning, and it should be continued till the software is in use. Incorporating security during software development leads to a reduction in development budget and effort. Researchers must first identify potential known vulnerabilities and solutions against the device. Based on this, the new framework would be designed that must follow the CIA approach to provide a secure environment with minimizing attacks in the future. When all security concerns are resolved in their early stages, it can significantly help to minimize security breaches.

Keywords: Security, Malicious, and Vulnerability.

Software Quality Forensics and Standards: An Ontological Approach

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The recent trends in cybercrimes may be significantly leaped up, malicious codes and techniques will get ability to harm promptly with divergence of trails. Digital forensics evidence might be having serious concern to assist cyber law prosecution with containing quality and standards. This is the time to review all the best practices, processes and procedures involve in digital forensics to overcome deviation and make common platform for standardization .The ontological analytics gives specific road map for all aspect of Digital forensics and Digital Evidence process and policies. The role of Software forensics is to track message perpetrator of malicious code, authorship analysis of mobiles source, apps, binary code and tracing the root culprit. Nowadays digital forensics tools have not authentic measureable reliability and fault tolerance framework with standardization that help in law enforcement. This research paper focuses on software quality forensics by identifying approaches and implementations of software forensics system.It has measuring concern toward software quality factors that impact on breach in digital evidence procedure due to software failure.

Keywords: Software Quality Forensics, Digital Forensics, Digital Evidence, Software Forensics, Digital Forensics Ontology, and Digital Forensics Standardization.

An analysis of Development of Product with the Scrum Framework

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Scrum is a framework which deals with software development process which enhances the flexibility, efficiency of product. It's not completely static, even though Scrum is organized. Its implementation can be customized to any organization’s needs. Objects from Scrum are components that help you share critical project data with everyone involved. There are three artifacts in Scrum- Product Backlog, Sprint Backlog, and Incremental Product. There are various cycles held in Scrum process that are Sprint planning meeting, Daily Scrum, Sprint review

meeting, Sprint Retrospective. A product is constructed with Scrum in a series of iterations known as sprints that break down massive, complex projects into several pieces. A sprint is a brief period of time where a scrum team operates to complete a certain amount of work. A joint effort between the product owner, scrum master, and the development team is to pick the correct work items for a sprint. The prioritizing of work to be done is known as Product Backlog. It has been observed that implementation of Scrum framework eliminate several flaws which increase the scalability of product. How the scrum artifacts, activities and principles play a crucial role in preserving the Scrum foundations and improving the capacity of Scrum team members to tackle the challenges of software engineering management relative to conventional approaches to software development. In project management, Scrum emphasizes coordination. It emphasizes responsibility and is an iterative step towards a well-defined objective. Scrum is part of the growth of agile applications and agile practice teams. Scrum is derived from rugby sport, where scrum is a formation in which everyone plays a particular role.

Keywords: Scrum, Agile, and Sprint.

Evaluating Web Services Frameworks for the Development of Enterprise Web Service Computing Systems

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The enterprise web services enable in creating services which are well-described, platform independent and also interoperable. The Service Oriented Architecture (SOA) decomposes the system into parts that can be accessed by the services and to individually design them later to construct new systems. This framework is built on Simple Object Access Protocol (SOAP). The other Representational Oriented architecture (REST) architecture requires use of HTTP. Both frameworks extend with offloading functionalities and different types of resource intensive operations. SOAP exclusively relies on XML to provide messaging services and the REST on receiving the required information using the URL approach. The performance of both SOAP and REST depends in terms of loading the server, network, invoking and processing of relevant

service requests. The SOAP possesses a stack of generated handlers and parsers during processing while the RESTful service doesn't have any server side sessions. On the contrary, there are more HTTP requests in REST, which also scales up the service processing. The performance varies in both the web services frameworks and the web service architecture is also confronted with problems like security. These characteristics bring a range of arguments and claims to identify the better approach in terms of performance, scalability and ease of implementation. With the trends moving from heavy weight applications to applications that have more than one device compatibility, REST provides more clients for the web services platforms than SOAP. Additionally, it carries JSON support that is much faster in parsing XML. Based on the existing study, it indicates that SOAP is more secure and REST is easier, yet both achieving goals. However, for machine to machine communications in enterprise applications such as business processing with BPEL, transaction security and integrity, there is much more research gap to explore and could provide broader spectrum in implementation of real time large scale enterprise applications. The research work aims to identify this inherent weakness by providing substantial evidence based evaluation on both approaches. This will be carried by developing a web service application on a client/server messaging model using Visual Studio.Net and PHP platforms. The performance of these systems will be a basis to evaluate performance of implementing framework in terms of mixed methods research and also a comparative analysis of implementing SOA and REST in an enterprise computing environment. The research would also describe SOA and ROA techniques in relation with business process management. The proposed system will be implemented as an enterprise solution to analyze and evaluate the performance, time and effort. This evaluation provides the software metrics to measure the quality of web service and to analyze the issues and solutions in the systems based on the frameworks implemented. Further, the recommended frameworks based on XML-RPC protocol based such as CodeIgniter, and the SOAP based such as .NET Framework can greatly increase the productivity and lower the time and effort required for developing the enterprise web services. These above processes would support making business decisions to a large extend in any corporate in attaining competitive advantage.

Keywords: Framework, Protocol, Web Services, and Enterprise.

Advancement of Privacy Issues in Crowdsourcing

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With the expansion of Internet, we have noticed a number of changes in our day-to-day lives which include e-commerce, blogs and social networks to name a few. E-shopping gives anyone an opportunity to be an owner of a shop and a number of selections to the customers, blogs gives with a medium of transmission of their opinions. The Internet provides all of us an opportunity to communicate openly with each other all over the world. It enables everyone to share their views and make new innovation to exist. This has given rise to Crowdsourcing. On one hand Crowdsourcing gives benefit from a large variety of ideas and skills can be obtained and on the other hand it provides its users vulnerable to privacy risk. Privacy is a very vast concept which encompasses freedom of thought, seclusion at one's home, control over individual information, total freedom from monitoring, protection from several Interrogations. The major challenge in Crowdsourcing is Privacy Preservation. Dimensions of Privacy can be broadly classified into four major categories. Layered framework of Privacy, Privacy Principles, Privacy Concern, Enhancement of Privacy In a layered framework of Privacy, it has following major divisions such as social, technical and legal. Basically it has 5 Privacy Principles: User awareness, security, collection limitation, and use limitation, integrity Privacy Concerns: Within the context of Privacy Personal information is to be collected from least to most sensitive. Some important concepts related to Privacy concern are as follows: Anonymity, Pseudonymous, unobservable, unlink ability, deniability. Privacy enhancement: In this number of methods are suggested such as User preference, negotiation, ease of adoption, usability, isolation. A large-scale of literature review regarding feature of Privacy in Crowdsourcing had been made. The important stages of the review process are: Selection, Specification and summarizing. The objective of Crowdsourcing is to take work and outsource it to the worker's crowd. For example- Alternatively, Wikipedia creating an encyclopedia by itself, paying writers and editors, they had given the Crowd to work on their own for the creation of the information. The result of this is the most extensive encyclopedia in the world. The fundamental approach of Crowdsourcing it that many people working together results better. The proposal or the suggestions given by a huge

crowd will be definitely of superior quality as many ideas, skills and idea generation will be given. Crowdsourcing is the method of outsourcing the work to a large crowd of people, generally defined as an outsourcing of the people. The motive is to generate new advanced skill sets or a huge manpower is required to achieve some distinct purpose. It is the method of fetching a large crowd for some similar goal, innovation or problem solving. It is energized with new technologies and social media. It can occur on several levels and at different industries. Thanks to our developing conformity, it has now become easier than ever before for the every single to put up entirely develop ideas, time, skills or investment to a project. This entire collection is known as Crowdsourcing. Today Consumers desires to get intricate in the companies they purchase from, which enables Crowdsourcing, an extremely worthwhile tool.

Keywords: Privacy, Crowdsourcing, Internet, and Outsourcing

Next Step in Passwords: Alternatives to Plain Text Passwords

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Passwords have been the most common way of authentication. Passwords are so ingrained in everything we do from banking to email to shopping. Organizations and Individuals just relying on static passwords bring unacceptable level of risk of unauthorized access. Passwords are not practically secure in real world. It is very unpractical to remember unique and secure passwords for every different service or website. They are vulnerable of being stolen or extracted because of human competence. Password based authentication is the top cause of data breaches and costs millions to recover back. Better authentication methods needed to be implemented to secure corporate assets and individual privacy. Identity and Possession based methods are better alternatives. In this article, the authors discussed about the current issues in password based authentication methods and security approaches to deal with these issues. This article provides an effective future direction for researchers to produce impactful outcomes. Passwords are going to be around us for a while. It is necessary to make the change and take next step. Gradual and smooth transition is important to make it happen. These are the current issues faced by users in password pased authentication systems. There is strong need to focus on these problems and

incorporate better authentication methods.Users often reuse the same passwords for different services. Unauthorized people can get access to various of services at once if password from one service is compromised. Users often write down passwords. Example: Sticky notes, diary, etc. Sending passwords over unsecure networks makes them easy to steal. Free public Wi-Fi is the most common example of this practice. People often use too weak passwords. Passwords are often shared amongst users. Users tend to keep same password for a long time. Password-cracking tools are getting really good at guessing passwords. Increasing computing power makes brute force methods faster than ever. Passwords require users to remember numerous letter/number/character combinations which is totally unrealistic. It is not practical to remember unique and secure password for different service. Passwords are easily stolen through social engineering. There are endless range of methods, for example, convincing emails or spoofed websites (phishing) where people are asked to share their username and password. It costs millions to recover from Data Breaches, which is mostly caused by password leakage. Stolen password can be used to access the service or private data without the real user even noticing it.

Keywords: Passwords, Authentication, Security, and Privacy.

An Overview of Security Testing: A Design Perspective

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The speedy development of workable software puts a lot of pressure on software development team due to which the focus of the development team has always been on the functional requirements. As such, the identification and implementation of non-functional requirements, especially, its security testing which otherwise is considered as a time consuming and quality providing process has always been neglected. But as per the available statistics, security testing has played a vital role in the success and failure of software systems. The non-functional requirement not only introduces characteristics like quality, they also present constraints under which the system must operate. This maximizes the software system's success. According to the latest trend, the industry, experts and academic communities are drawing attention to software security. The objective of developing secure software is to try to mitigate asset risks in order to achieve business goals. Software security measurement characteristics and metrics must be

correctly defined. Methods for accurate and complete security measurement of software should also be comprehensive. This study reviews the work that has already been done in the area of security requirements engineering. It also identifies future research work to improve security incorporation in the software development process. Additionally, in this article we also discuss how important is testing profiling from security point of view. Which brings us to the uses of security testing profile like it is vital for finding loopholes, for zeroing in on vulnerabilities, for identifying design insecurities, for identifying implementation and dependency in securities and for organization wide software security.

Keywords: Security Testing, Software Development Life Cycle (SDLC), and Requirement Engineering.

Green Technology: A Review

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The field of green technology encompasses a continuously evolving group of method and materials from techniques for generating energy to non-toxic cleaning products. Green Technology maybe a stated goal of a business segment within a large company, or the focused mission statement of a smaller start-up firm. It can cover anything from recycled products packaging to longer lasting light bulbs and alternative energy production. Larger companies like Starbucks and whole foods employ green technology practices alongside a variety of small start-ups. Green Technology being referred to as Environmental Technology and Clean Technology. Going on with the Green Technology, our environment needs immediate recovery from pollution. In this paper, we analyze that the Green Technology means the technology which is environmentally friendly, developed and used in such a way so that it does not disturb our environment and conserves natural resources. The term technology refers to the application of knowledge for practical purposes.

Keywords: Green Technology, Green Product, Environmental Degradation, and Green Entrepreneurship.

Reliability Exploration of DCELL Interconnection Structure Network

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Cloud computing has become a genuine philosophy for organization provisioning over the Internet. It works relying upon a pool of shared enlisting resources open on demand and commonly hosted in data centers. This technology is expanding greater affirmation as a public utility which gives the client space to focus in on his work without focusing in on foundation and upkeep of other huge devices, as they are presented and kept up by the cloud expert communities. Cloud computing is proposed to be flexible, and improve the quality of service, impact of cost and besides improved user interface with the objective that the customer can esteem the idea behind cloud computing. The reliability of an enormous data center network is the possibility that it plays out its ordinary limits dependably well under the given conditions inside a predefined time interval. In this paper, we analyze the reliability of Dcell interconnection network by using a typical mean time to failure approach.

Keywords: Interconnection Structure Network DCell, Mean Time to Failure, Reliability, and Link Failure Model.

Re-Conceptualizing Software Engineering Process during COVID-19

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During this pandemic the working strategy for all sectors have changed, it has stimulated the businesses to develop customer focused software, resulting in needed changes to software engineering perspective. Since the demand of customers are changing due to changing needs during this pandemic, software engineering technology , processes and culture needs to be re-conceptualized. The COVID-19 pandemic has changed the perspective of work. It has made the remote work mandatory for all, the urge for buying and selling products and services online and digital interactions with the customers. James Kobielus, Research director and Lead analyst at

Futurum Research, writes that "while product launches may have been put on hold, production continues." In this emerging change, the software has become the center for every organization's strategy. Therefore an innovation is this field was experienced, the modern software engineering strategy can be the answer for all problems as it addresses the needs of the customers in a better way which will lead the software to have enhanced operational efficiencies and improved decision making strategies. It will also help customers to perform online processes rather than offline, leveraging AI to boost process stability and getting online software feedbacks from the customers. This pandemic raised the need of organizations and other industries to become more software-centric. Due to COVID-19 outbreak, software developers witnessed a dramatic change towards the need of the software. To adapt new changes experienced during pandemic, now software engineers have to reimagine the way they build the software. They should focus on how to have a cohesive business and software product strategy so that they can create software products which satisfies the customers, creating a robust, secure and scalable strategy for securing software and providing troubleshooting support for all processes and applications and providing a nimble and modern development methodology. The above addressed things help the software engineers to re conceptualize the software engineering process. A new technique known as Software Product Engineering for building customer-facing and market-oriented software is originated. The main focus is on the expanded role of the product- owner who does market analysis, product specification and creating a roadmap of the product. The product owner works closely with the software engineers as they build the first release of the product and delivers it to the end users. The end user gives their feedback and then product owner transfer the feedbacks to engineers so that it can be integrated into the next release. This pandemic has changed the meaning of software engineering and it can be considered as re-conceptualizing the software engineering process. A lot of tools, techniques and process have been improvised to make software which provides better decision making and collaborative environment.

Keywords: Risk Analysis, Risk Assessment, and Risk Classification.

Risk Classification and Analysis in Software Development

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Software Development Management (SDM) plays an important role in the software development. Software development management concerns such as objective identification, evaluation, planning, cost estimation, risk management, resource allocation, activity planning, monitoring, and controlling. In software risk management different types of methods and tools exists. Due to not proper management of software risks, software has a higher rate of failure. Risk is any situation or event, which could negatively impact on software development. Software development has many risks in their life cycle. Software management and development are more difficult, due to an increase the software size and its complexity. Software development needs more analysis on risk and assessment of risk. Software risk classification and analysis is classifying in this paper. The probabilistic calculation of risk analysis and risk assessment shall be carried out. Risk analysis and risk assessment are helping in qualitative and quantitative assessment for risk failure, and it's also helpful for software risk management. Risk analysis and classification of risk is used in software methods and tools.

Keywords: Risk analysis, Risk assessment, and Risk classification.

Distributed Energy Resources Allocation in Distribution System Using EERP

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A distributed system contains several nodes that are physically separate however joined along exploitation the network. All the nodes during this system communicate with one another and handle processes in tandem. Each of those nodes contains little a part of the distributed software system software. Along with some advantages, DS also have some challenges like security, load distribution, resource allocation and failure due to electricity. Power loss minimization of the distribution system is utmost important to improve system efficiency. Also, sufficient reactive power support to the system is necessary for improving the voltage profile, system stability and

reliability. In order to achieve all these it is essential to introduce new technologies for optimal usage of existing resources. A well-managed time-constrained workflow scheduling is needed for improving system performance and end user satisfaction. Meanwhile, the intrinsic uncertainty in dynamic systems increases the difficulties of scheduling problem. Therefore, it is a great challenge to improve performance and optimize several objectives simultaneously. The fundamental aim is to study and critically review the Distributed Energy Resources Allocation in Distribution System using EERP. The objective of research is to study of Distributor Generators, capacitors and capacitor allocation problem in distributed system, with an objective of power loss minimization and voltage profile enhancement. The research will also provide an energy efficient routing protocol (EERP) which will efficiently utilize the battery power of the nodes in such a way that the transmission network will get more lifetimes. I will use transmission power control approach to adjust the node to node communication power and load balancing approach to avoid over utilized nodes.

Keywords: EERP, Distributed System, Transmission Network, Distributor Generators, and Capacitors.

3D Internet Utilities and Applications: A Survey

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Internet technology is growing for changing the situation arises by day to day in the area of communications, business, and entertainment, academic, etc. The 3D internet concept is very strengthening for each work to require and everyone depending on it that those who overlook to things nearby natures more. In the 3D internet technology, the same document can be read by more than one user at a time and also connect the people who enjoying the common interest. This technology is a particular set of virtual worlds interconnected to each other for benefiting to teleporting, user visit for consuming the services, virtual conferencing, and also provides the shopping. Today, the internet has played the most important role in my daily life. WWW (World Wide Web) are repository of small data, but nowadays more develop for enormous and unique as well. The present activities are associated the partially or entirely with computer-generated worlds to be elevated at advanced level. Furthermore, for all the movement related to our life is

mapped with it and also several objects in DW (Digital Worlds).Nowadays the world has more advanced in 3D stereoscopic demonstration and on the internet. This concept is yet to be applied and browsers consists the properties linked to artificial intelligence, and perceptron. In this paper, we have survey of different research papers and discuss the features, applications, merits, methods and also we provide the concept about this technology required for implementation.

Keywords: Stereoscopic, Artificial Intelligence, and 3D Internet.

Testing Two Random Multilayer Structures for Optical Filtering Performances

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Two random sequence multilayer structures are taken. These random multilayer structures have low (L) and high (H) refractive index layers arranged randomly. The first multilayer is having low and high index layers in two bit binary number sequence (00, 01, 10, 11) i.e. LLLHHLHH. The second multilayer is having low and high index layers in two bit Gray code sequence (00, 01, 11, 10) i.e. LLLHHHHL. These two multilayer structures are subjected to refractive index variations in the low index layers. A mathematical model is given for calculating transmittance through these structures. The transmission spectra of these two multilayer structures are plotted by using this model. The output spectra for different refractive index combinations are studied and their optical filtering performances are investigated. On comparison, it is found that transmission spectrum of first multilayer structure shows nominal shift with refractive index change of the low index layers, while the second multilayer structure chosen here shows a significant shift in the transmission spectrum, even for the small changes in refractive index of the low index layers. Further, second multilayer structure shows high transmittance peaks in the output spectrum. These narrowband transmission peaks lie in the Infrared region of optical communication. By changing the refractive index of the low index layers, the transmitted wavelengths can be tuned or changed. The transmitted wavelengths can be chosen to be in ITU-T (International Telecommunication Union-Telecommunication) recommended grid. It is concluded that for optical filtering purpose, the second random multilayer taken here is superior, so, it can be used in designing wideband and multiband tunable optical filters for optical

communication. Further, due to large shift in transmission spectrum in the second multilayer structure very fast tuning can be achieved. By using electro-optic materials in the layers electrical tuning of the spectrum can also be achieved. The electrical power consumed in electro-optic effect is very nominal, so electrical tuning of the transmission spectrum can be achieved at almost no extra cost. This offers the advantage of computer controllability. Further, the number of layers used in the structure is less (only eight) so the fabrication of this structure is easy, it also has of small size and low weight. The cost of fabricating the structure is also low.

Keywords: Telecommunication, Infrared, Spectrum, Refractive Index, and Optical Filtering.

Track 4

Data Science, Machine Learning, Internet of Things (IoT) and Cloud Computing

Quantitative Analysis of Security Issues of Big Data: Healthcare Industry

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Big data has changed the way of industry to analyze, manage and flow of data in any industry. The large amounts of data, typical environment, complex equipment, and shortage of security specialist developer have all contributed the issues in healthcare sector. The recent published report by the US department of health and human services mentions the key issues related to the healthcare sector. The big data has promising field to make change in healthcare sector. Big data help to improve the patient outcome, gain precious imminent, predicts outbreaks of pandemic, predict pandemic situation, manage the Electronic Healthcare Record (EHR), manage the diagnostic report, to help the diagnosis by the record, evade avertable disease, reduce the cost of healthcare delivery, and improve the quality of life. Big healthcare data have many merits in spite of security and privacy, which is a challenging task in healthcare sector. To insure a secured and trustworthy environment of big data, it is necessary to identify the limitations of existing solution and revise the security of data. The Security selection of factors is a challenging task of big healthcare data. The quantitatively determination of security factors are help the developer and user in life saving process (healthcare sector). We have adopt the multi criteria decision making analysis Fuzzy Analytical Hierarchy Process (FAHP), to determine the weight of the security factor and the approach of Fuzzy Technique for Order Preference by Similarities to Ideal Solution (FTOPSIS), to determine the rank of the affecting security factors of big healthcare data.

Keywords: Big Data, Fuzzy AHP, Fuzzy TOPSIS, Security of Big Data, and Issues of Big Data.

COVID-19 Pandemic Accelerates Machine Learning for a Safe Future

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COVID-19 pandemic is the exemplified global health crisis of our time and is one of the greatest challenge, we have faced since World War II. This situation has disturbed all of us in different ways and we are confronting a problem to sustain for the continuity of basic necessities. All medical professionals, police, government officials and hospitals are struggling in the fight against this virus. As everyone is tackling this difficult situation, Information Technology is providing the best solutions in the safest way. The need of recent technologies has accelerated to let the wheels rolling in diverse fields like education, governance, and private sector. We know that COVID-19 is highly contagious and can spread person-to-person, so for this Machine Learning based model can help us in identification of who are most at risk, diagnosing patients with symptoms like are fever, cold & cough, loss of taste, loss of smell, muscle cramps, and shortness of breath to draw conclusion whether they are COVID-19 positive or not, expedited assistance in the development of drug and also finding existing drugs that can help. The model will also help in the prediction of the spread of the disease through clustering for tracking where viruses come from, and further forecasting the next pandemic. The implementation of an AI based robot can be done that is enabled with a camera for image processing, equipped with thermal thermometers for temperature reading, and collect data from patients through speech-to-speech technique. For provision of a better healthcare assistance, robots will be trained to predict and react according to the situation. And the deployment of robots in hospitals for patient monitoring, check-up and care can stop the spread of this contagious virus. The constant maturity of the model will be maintained with machine learning algorithms that can significantly improve treatment, medication, screening, prediction, forecasting, contact tracing, and drug/vaccine development process for the COVID-19. This innovation can act as a panacea in this pandemic and will outshine as a boon by setting a benchmark for the world in Medical and IT industry.

Keywords: Machine Learning, Artificial Intelligence, Image Processing, TensorFlow, Pandemic, and Prediction.

Succour in Health Industry: IoMT

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When innovation is in the way of saving lives then that innovation becomes a boon. Considering the concept of innovation, the combination of medical-grade devices and computer system has made its remark as IoMT-Internet of Medical Things. IoMT denotes the interconnection of health care machines and their integration to broader-scale health networks to provide better health services. The Internet of things (IoT) is the web of physical devices— "things"—which are embedded with sensors, software, and other technologies to provide connection and transmission of data over the Internet with other devices and systems. Hence the infrastructure of IoMT consists of medical devices, software applications and health systems and services. It includes sensor-based devices like wearables and stand-alone devices for remote patient monitoring. As per the Deloitte report notes the rise of IoMT is driven by "an increase in the number of connected medical devices that are able to generate, collect, analyze or transmit health data or images and connect to healthcare provider networks, transmitting data to either a cloud repository or internal servers". The face of health industry is changing rapidly as health systems like smart pills, movement detector, real-time patient health monitoring, fitness tracking and diagnostics and virtual home systems helps health workers, doctors to monitor or tack the slightest improvement or movement in the patient. Also, devices like personal emergency response systems –Active Protective's smart belt aids patients to get fast medical help in case of emergency. IoMT uses sensors-based devices which is either embedded on the surface or attached to patients' body, clothes or bed to collect and transmit data through wireless body area networks (WBANs) to the servers. IoMT is thus beneficial as it can-increase the life expectancy ratio, reduce the complexity of appointments of doctors and patients, minimise the cost of medical aid, provide fast and accurate monitoring and health services, flexibility in the working condition of health workers, remote monitoring of chronic diseases. For example, Smart Pills which works on the concept of microscopic sensors is once swallowed by patient for measuring medication treatment effectiveness by transmitting data to the connected devices. Beyond being advantageous there are many challenges which needs to be taken care by IoMT such as

reliability, accuracy, robustness, safety, cyber security and scalability, interoperability, verification and validation. Apart from this the cost which it incurs from its operation and maintenance needs to be address of. Also the question arises, how much capable is the developing nations to adopt m-Health concept from developed nations. Pervasive health care devices are highly demanding especially when the world is facing a pandemic COVID-19 Corona Virus. Devices like m-Health will be a great help to collect, transmit, analyze and store medical information from various sources for doctors to provide fast and upgraded medical aid. Information will be stored on servers or cloud based technology which can be accessible medical practitioners as and when required.

Keywords: COVID-19, M-Health, IoMT, and Smart Pills.

Cloud and IoT Based Disease Risk Prediction using Improved K-Means Clustering Over Big Data in Smart Healthcare System

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In the current era, IoT based smart sensor devices are generating huge amount of data (Big Data) and providing the various online services in the healthcare system. So the healthcare sector has been effectively acquired it's influenced and dramatically changed with the big data growth for accurate analysis of medical data and early detection and prediction of disease risk. Currently this Big Data is a hot research area from academia to IT communities especially in healthcare. As number of smart IoT based sensor devices increasing exponentially due to whichhuge volume, huge variety and veracity of data is generating very fast in the healthcare system. So Big data analytics is not only opportunities but also a necessity. This large volume of data we can access easily and store securely in the cloud with the help of cloud computing technology. Our smart healthcare system is very useful for the prediction of disease by using some attribute like age, sex, cholesterol, chest pain, BP and many more. In this paper presenter presents various frameworks of big data, analytical capabilities of big data, some reported case studies, some research challenges and opportunities brought by big data. Researcher also examining few similarities and differences of these techniques and technology based on some attributes. In addition to this, we are also presenting Improved K-means clustering algorithm for various risk

classification of disease and improving the accuracy of medical data analysis with the help of big data analytics. In this way, this clustering algorithm is so much convenient for the prediction of heart disease.

Keywords: IoT, Prediction, Online Healthcare, Clustering, and Big Data.

Importance of Trust: Fog Computing Perspective

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In the recent past, substantial amount of growth can be seen in Internet sector. This enormous drift can be seen due to the advancement of technologies and the ease at which they can be used and implemented. IoT backs major portion under this umbrella of technologies. The amicable features of IoT have made it a buzzword within no time. As the population set off over these devices the performance aspect such as low latency and high processing speed, accurate monitoring etc. become the area of concern for the researches and practitioners. For dealing with the latency issue and assuring timely responses have paved a way for progression of Fog computing. The primary goal of fog computing is to make a use of the existing edge computational resources and limit the burden over the cloud by not shoving everything over it. The presence of this mid layer also has some issues. Security appears to be the major set-back that has to be addressed to extract the maximum benefits of fog computing. Amongst different security issues, 'trust' in this domain has got major attention. Employing trust management approaches will improve the interaction between the devices and will help the fog nodes and other resource constraint devices for predicting their future behaviours as well. In addition, the deployment of trust management scheme can detect both intentional and unintentional behaviour of intermediate nodes by keeping the track of their previous records. Trust can further improve the reliability of the network. Acknowledging trust at this level motivates the collaboration among the different network objects which in turn enhances the performance of the network. In this paper, the authors have discussed the types of trust that can be addressed in this environment. Also, the authors have selected some sub- factors that contribute in ensuring the efficient management of trust at fog level.

Keywords: IoT, Fog Computing, and Trust Management.

Privacy in Fog-IoT Paradigm: Types, Issues and Dependant Factors

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In the present world, no application area is untouched with the use of smart devices. The increase in number of connected devices has led to a flood of user data all over the Internet. In addition, low response time and increased performance is the demand of almost every individual. Fog computing may be considered as the perfect solution in the case of latency-sensitive applications. Real-time analytics is the basic idea behind the introduction of fog computing concept. It may be defined as an extension to cloud layer and is ideal for sectors such as healthcare, finance, etc. This layer acts as a middle-layer that brings cloud services closer to the end-user, thereby decreasing the latency, providing efficient data access and location awareness. With its wide application in sensitive areas, this new technology poses severe threat to privacy of the users. Being in its outset, fog computing still has comparatively lesser privacy controls. Also, the existing privacy solutions for cloud cannot be applied to this level because of the architectural differences between both the concepts. Hence, there is a need to address privacy issues at fog level. Therefore, in this paper the authors have discussed about the different types of privacy and privacy issues with respect to fog environment. The authors have also identified different privacy sub-factors through which overall privacy in fog scenario can be monitored. The identified privacy sub-factors may be utilized by security practitioners to manage privacy at fog level systematically.

Keywords: Fog computing, Latency-sensitive, and Privacy Issues.

IoT Risk Assessment: Risk Identification and Elimination For Security of IoT devices

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In today's era technology becomes a fundamental part for everyone all over the world. Everyone wants to stay connected and make day today activities more effortlessly and quickly for that reason the IoT helps many devices to associated and responsive all the time. IoT (internet of

things) is rapidly upward as a collection of devices connected by accomplishing the purpose of building smarter devices, cities, hospitals, homes and various structures. IoT provides a network for the devices in which they can interact with each other and connected through the internet. As the rapid number of the IoT devices connected to the internet it is estimated as in upcoming years it would be double as compared to the present devices connected. However, the increasing number of IoT devices may suffer from various security issues and attacks that are harmful for the all the devices connected. As the IoT devices are capable to share and access the information anywhere with anyone anytime which may be a risky sometimes as poor security negatively impacts user privacy. BOTNENTs, DDOS, unauthorized access and physical security are the main issues to the security and privacy of the accessing IoT devices. We briefly analyzing every aspects of security risks by making device security a top priority and trying to find out various solution to keep our shared information secure over the connected IoT devices.

Keywords: IoT Devices, BOTNETs, Unauthorized Access, DDOS, DOS, and Physical Security.

Data Science Conquering Challenges Endured Amidst Covid-19

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COVID-19 has dramatically changed our lives since it was declared pandemic. It turned economy upside down and led millions to job losses. Multiple countries reported negative GDP growth due to COVID-19 and there is fear of countries going into recession too. Data Science is working as a savior in this pandemic as we have utilized Data Science techniques to fight epidemic. Data Science is mainly used for better decision making (whether A or B), predictive analysis (what will happen next) and pattern discovery (is there any hidden information in the data). A number of Data Science technologies like Contact Tracing application, Surveillance System and Automated Health Monitoring Robot are being used to combat the spread of virus. In this abstract, we describe how the Data Science is preventing the wave of infection. The coronavirus is a highly contagious respiratory disease which affect the lungs. We can see the extent of damage once the virus infects the lungs through Image Analysis techniques. Imaging of lungs gives better understanding of COVID-19 virus and its early detection. Deep Learning and Image processing has made it easy for a radiologist to detect the area of damage. Doctors just

have to upload patient's scanned file on cloud-based web interface and it returns diagnosis result in a matter of few seconds. To prevent the spread of virus, we have employed tracing technique using Data Visualization. In this technique, we prepare graph using scatter plot to show coronavirus hotspot areas in different countries. The Digital apps are designed to collect individual's personal data through which we trace a person who is more vulnerable to novel virus. This helps in recognizing the affected people easily without having physical contact and also keeps the data for future analysis. We have controlled further spread of virus by using Social distancing tool. Deep learning technique has made it easy to ensure social distancing. World Health Organization is providing accurate information by collecting data from different social media platforms. The collected data may be structured or unstructured. So, to extract valuable information hidden in unstructured data we have used Text Data Mining technique. Natural Language Processing (NLP), Data mining, and Predictive analytics help to prevent misconceptions regarding COVID-19. One of the big challenge was to control the virus with the limited resources as India was in state of lockdown for around 6 month. We had the limited availability of the Doctors, Nurses, and medical supplies stock. Our struggle was to control the spread and cure the patients with minimum closure. Deep Reinforcement Learning techniques made it easy for us. It helped us in understanding how one should take action in this pandemic. We used the intelligent resource allocation system to minimize the risk factor of spread of this virus. Drug discovery is essential in identifying existing therapy for coronavirus patient. This is being done by studying the effectiveness of drugs by employing Deep Learning technique on biomedical data. We have concluded that Data science has played massive role in safe unlock and helped us immensely in fighting against Coronavirus.

Keywords: Data Science, Data Visualization, Image Processing, Natural Language Processing (NLP), Data Mining, Predictive Analysis and Deep Reinforcement Learning.

Role of Balanced Dataset in Classification Task of Machine Learning

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Machine learning is used in real life for prediction task, classification task, data analysis task and optimization task. Machine learning performs different tasks on the basis of the data that is provided using real life working. Machine learning learns from the data in a similar fashion as humans learn from their experiences. Human learns inappropriate things from wrong experience similarly machine learning produces a wrong result from inappropriate data. Therefore an appropriate data plays an important role in machine learning to produce correct results. However the data that is provided from real life is normally inappropriate. At this point data preprocessing using under sampling is required to make the collected data balanced. The study is being performed to prove that machine learning produces better result of classification task after performing data preprocessing under sampling. The study used machine learning classifiers (logistic regression and random forest) and two different datasets and performed classification task. The observed results showed that classification task of machine learning produced comparative results with data preprocessing under sampling and found superior by 15% - 18%.

Keywords: Machine Learning, Random Forest, Regression, and Sampling.

Taking Artificial Intelligence to the Next Level: Applying Quantum Computing Techniques in Artificial Intelligence

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Several Research efforts have been done since many years for identifying the application of Quantum Mechanics in the field of Computer Science. In this era of Digitization, everyday hundreds of millions of data is produced through different identified and unidentified sources. In a recent survey by an organization, approximately 59 zettabytes was created in 2020 (1 zettabyte is a trillion gigabytes).So, the alarming situation before us is to manage these data efficiently. Artificial Intelligence is the area of Computer Science that is used to train the Algorithm to solve

the real time applications. It is at the heart of much of today's technical innovation. Society is getting transformed at faster pace and we need a machine that can sense, reason, decide and act according to the problems at a much faster rate. Quantum computing is said to be helpful in somewhat answering the challenging problems. It has the capabilities of increasing the power of Artificial Intelligence. Quantum is the concept or term that determines the smallest amount of energy or any physical entity involved in any type of interaction. In other words, it can be said as unit of something at very fundamental level. In this level, particles behavior is said to take more than one state at a time and has higher interaction even with particles which are far away. Quantum computing is based on quantum bits or qubits. Traditional computer machines works on Binary value either 0 OR 1 at a time. But, Quantum can be 0 or 1 at the same time. Representing Information in qubits allows the information to be processed in ways not possible in traditional computing. It allows larger problem to be run, because increasing the no. of qubits leads to exponential increase in the size of the feasible search space. Implementing Quantum computing will develop rich connection between bits, will incorporate better control features, will lower noise probability and will lead to easy to use applications. Quantum Computing when combined with Artificial Intelligence helps in effectively handling enormous amount of data. It expands the capabilities of Artificial Intelligence by increasing speed power of analyzing the data in machine learning and in various programming methodologies. These advantages can benefit us immensely in the field of Computing, Communications, Energy, Biomedical and Defense.

Keywords: Quantum Computing, Artificial Intelligence, and Qubits.

A Review of IoT Based Smart Cities in India

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Government of India is continuously making effort to create smart cities in India and Internet of Things (IoT) is providing extensively a vital role in this prospective. In the near future, IoT techniques may give India a new look by linking country economy, society, environment and global needs which is also the aim of government. To make India smart and progressive, there is a need to make maximum number of smart cities and to develop the smart cities, there is a need

of good management system and it is observed that IoT can support via the inclusion its backbone techniques like artificial intelligence (AI), edge computing, cognitive computing, and its platform such as mobile internet, cyber security, predictive analytics and digital literacy. IoT provides a wide range of physical level to the data and application layers features to connect the onboard devices interchange of data and also it saves the time. KPGM (Klynveld Peat Marwick Goerdeler) is an association with exhibitions India group launched IoT in smart cities. Smart cities improve quality of life by implementation of technologies provide help for city and citizens as well, it is known that India has 7th position in the world by its area and 2ndin population there is highly need to implement such type of technology. It is significant for government of India to offers different services to its citizens and IoT helps eloquently to achieve this purpose. IoT gives value to smart cities through various type of sensors which are created to implement in different places by their working capabilities and it would be seen in terms of intelligent traffic management, water contamination, pollution status, weather condition, smart health, smart education, smart parking, smart meters, smart lighting and many more places that helps to make citizens daily life easy. In this era each smart city is rig out with various mannerism of electronic devices. In smart cities, networks of sensors, cameras, wireless devices and data centers form the key infrastructure, enabling civil authorities to deliver critical services in a faster and more efficient way. Smart cities are also much more environmentally friendly because they use sustainable materials to build their facilities and reduce energy consumption. Efficient use of technology to build efficient transportation management systems, improve healthcare facilities, and be robust to connect all businesses and people beyond the relationship between central and quasi-national governments, a communication network can be developed. A smart city that is both sustainable and attractive to citizens and businesses requires a new type of smart infrastructure - an innovative and open platform based on smart sensor networks that can help promising cities integrate a complex set of service costs more predictably, efficiently, at a pace and at a scale. Although many smart city technologies, including smart grids, smart meters and real-time transport information, are already in pilot programs. In the past it was difficult or even impossible to combine these digital devices, but in the future, the integration of these technologies may become very helpful to develop the smart cities at large scale.

Keywords: Smart City, IoT, Artificial Intelligence, and Cognitive Computing.

Big Data Application in Healthcare

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In this modern era as technology are rising day by day the data on internet also rising rapidly. We can also name this era as era of big data in the field of digital technology. The areas of science, engineering and medical are producing data at an exponential rate. So, to handle and explore such amount of data, big data has started to play an important role. Big data has huge scope in the evolution of practices and research. It has provided tools to analyzed managed structured and unstructured data. It can be used to predict diseases preventing of mortality, medication and cost of medical treatment and savings. There are many challenges in implementing big data in healthcare especially in privacy data classification. Here we will discuss some of the application which we are using or which we can use in future in our healthcare system. Big data analytics helps in discovering major decisions by understanding patterns and relationships with the help of machine learning. The application of Big Data method is growing quickly in the domain of healthcare administration. Many hospitals have applied analytics to big data from various sources including health records to achieve some kind of improvement in healthcare. Proper use of big data in healthcare had led to improvement in delivery coupled with cost savings. Due to such large data the challenges we face includes accessibility, Security, implementation costs and transportability. To handle such big volume of data, big data has proved to be the most efficient technology while using it with machine learning algorithms. Healthcare is a prime example how the three V's of big data i.e., velocity, variety and volume are a native aspects of the data it produces. To add to the three V's, the velocity of data is critical for its meaningful use. The use of big data is a benefited in application involved usability and efficient decision support. Most problems occurred in the case of processing heterogeneous datasets, patients, reported outcomes as opposed to electronic health records system efficiency and streamlined analytics to big data will contribute to quick and accurate diagnosis, treatment and reduced costs and lead to the overall improvement in healthcare quality globally.

Keywords: Big Data, Healthcare, Heterogeneous Datasets, and E-Health Records System.

The Necessity of Creating a Unified Framework as a General IoT Platform

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IoT is another incredible technological concept by which any device can be connected to the Internet and to other connected devices. It is a giant network of connected "things" and people within which the related data is collected and shared. The devices which are being referred to as "things", they are made capable of connecting to the Internet by the help of sensors and actuators. The consumer IoT market has been estimated to reach USD 104.4 billion by 2023 at a CAGR of 17.39%. The boom in the market has been derived due to increasing number of Internet users and adoption of smart devices, fitness prone thinking of most population and rise in disposable earnings in developing economies, as well as consumer preference for a better lifestyle. An IoT ecosystem has nearly been constructed due to continuous development of IoT Technology. However, various terminals, massive data, and complex application scenarios continue to mitigate technology's adoption. As a pervasive business, IoT faces many challenges like industrial barriers, technical restrictions, cross platform support, fragmented development of the industry. How to mask these kind of issues is the biggest challenge for the IoT environment. Architecting a unified intelligent information management platform will definitely give a boost to IoT development. As the technologies such as Cloud Computing, Big Data, and AI are becoming very much practically adopted, the IoT platform will inevitable become a non-vantage point for the IoT ecosystem deployers. The IoT platform is capable of implementing device management, network connection management, and data management and analysis for the terminals. The IoT Platform facilitates with IoT application development services and provides connectivity to the third-party application systems. As in the near coming future, technologies like Artificial Intelligence and Machine Learning will become an inseparable necessity and the backbone for the IoT ecosystem, the IoT platform will provide powerful business analysis functions. After a huge number of IoT devices are connected to the platform it will become possible to gather real-world information from sensors. Sensors transmit this information to the platform using mobile networks (LPWAN, GSM, 3G, LTE, 5G, and so on), Wi-Fi, ZigBee,

Bluetooth, RFID, and other connection technologies. As the time progress, this massive information repository can be stored on Big Data platform after which it can be processed and converted into valuable insights. Also, for the sensor network which needs a high-performance real-time transmission and also have a large transmission volume, a platform with edge computing deployment capabilities is the appropriate solution.

Keywords: IoT, Big Data, Cloud Computing, AI, Machine Learning, and Real Time.

Virtualization as A Pertinent Prerequisite for Cloud Computing

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Cloud Computing is another developmental, virtualization-based technology that delivers a spectrum of services including servers, storage, databases, networking, software, analytics, and intelligence- on the Internet thus offering faster innovation, flexible resources, and economics of scale. Rather than keeping the data and files on a local hard drive, the cloud facilitates storing them over a remote database, which can be accessed by an authentic user, anywhere and at any time. In cloud computing, the software and service environments are subscription-based i.e. a monthly fee is paid by the user to buy licenses. In exchange, the software and platforms are managed by the cloud providers and are updated continuously for maximum performance and security. Hence, instead of organizations having to make major investments to buy equipment, train staff, and provide ongoing maintenance, some or all of these needs are handled by the cloud service provider. Some of the repute cloud service providers include Amazon Elastic Compute Cloud-EC2, AWS Migration Hub, AWS IoT, AWS Code Commit, AWS Lex, and AWS Cloud Trail. Virtualization is a fundamental technology for Cloud Computing. It escalates the capability of the cloud to its fullest by virtualizing its network, storage, servers, data, desktop, and applications. Virtualization software allows multiple operating systems and applications to run on the same server at the same time thus lowering the cost and increasing the efficiency of a company's existing hardware. For the maintenance of resources in a cloud computing environment, virtualization is necessary as it makes it easier. Virtualization in Cloud Computing facilitates the security factor since it protects both integrity of guest virtual machines as well as cloud components. Resource sharing, high utilization of pooled resources, rapid provisioning are

also some of its positive factors. Server Virtualization, Operating System Virtualization, Software Virtualization, and Storage Virtualization are some of the kinds of Virtualization included in Cloud Computing.

Keywords: Virtualization, Cloud Computing, and Database.

A Critical Study of IoT based Earthquake Detection Systems

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The innovations and advancement in the field of technology made possible to detect and predict natural calamities and prevents loss of human lives. But Earthquake is still one of the most devastating and unprecedented event that we can't predict and prevent harm to human lives. Hence, there is a need to build a device to detect the earthquakes and relay early warning messages to possibly affecting regions. Earlier seismographs were used to measure the surface waves only after the earthquake reaches the surface. It is observed that Internet of Things (IoT) based earthquake detection system may play very crucial role by using a number of MEMS-based three dimensional accelerometer sensors which can be spatially distributed along huge terrains to measure the vibrations and acceleration of the ground which then will be transmitted over Wireless Sensor Networks (WSNs). In IoT based system, the focus is to detect Body waves, P-waves & S-waves, as they occur first during an earthquake and are less devastating comparatively. Employing multiple sensors ensures that the detection system will not produce erroneous earthquake warning alerts. With the help of WSNs, the earthquake warnings can be rapidly communicated to the expected affected areas and other neighboring regions which are already in use for various environmental monitoring activities. The necessary components required to build such a system consist of three dimensional acceleration sensors, a 32-bit micro-processor, a WiFi card and a buzzer. First, the sensors will detects the vibrations and provide it as input to the microprocessor, then the detection algorithm checks whether it is an earthquake or not. In case of an earthquake, the buzzer will go off and the alert warnings will be sent through WiFi to Wireless Sensor Network. A Bluetooth card can also be installed on the sensor nodes so that warning alerts can be easily shared to smart devices nearby. The idea of using smartphones as sensor nodes won't produce accurate results because despite the resources and high

computational capacity they have, they're in use almost all the time which makes them unsuitable as they might register user's movement and shaking of phones being possible earthquake as many of mobile games and applications make use of accelerometer inside the phones. Therefore, smartphones are not really a good option for earthquake detection; hence, a stand-alone cost-effective device could become a better option. This type of IoT based earthquake detection system will easily be scalable to cover other regions and will also be more effective as extra sensors could be employed into the detection system network. It is a cost effective solution and relatively easy to build and deploy. The earthquake warning alerts can be transmitted over Wi-Fi to particular stations for alert broadcasting or can be implemented as an alarm warning system for the affected neighborhood.

Keywords: IoT, Bluetooth, Earthquake, Wi-Fi, and Wireless Sensor Networks (WSNs).

Imputation of Missing Data in Machine Learning

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Every machine learning model depends on the data set it is using, however, it is nearly impossible to collect the exact and complete data values of the data set. Hence, the data set used in the machine learning model may contain missing data values for various reasons. The Data Science model trained with these data pits in its data set can decimate the model's qualities. In order to salvage this problem different imputation techniques can be taken into consideration but the Imputation method should be chosen wisely according to the data set and the machine learning model on which it is to be implemented. As there are various types of data set and similarly, there are various types of missing data which require the imputation techniques accordingly. The easier way to handle this missing data issue is by just ignoring the observation that have missing data, this option may work for some data set that have lesser or say negligible number of missing data values but for other data sets there would be greater risk of losing data points with valuable information. Hence, the better strategy should be considered that can impute the missing data from the data that is already available in that data set. There are three main types of missing data i.e. missing completely at random (MCAR), missing at random (MAR), not missing at random (NMAR). Few of the imputation techniques that can be used to overcome the

missing data issue are Do Nothing technique, as the name suggests, In this technique algorithm or model itself handles the missing data values, Some Machine Learning models can handle the missing values while some cannot such as scikit-learn. Other imputation technique could be imputation using mean/median values, this works by evaluating the mean/median value of the non-missing data and then filling the missing data values accordingly, this technique is easy and fast and also works appreciable with small size numerical datasets whereas, it can give very poor results on encoded categorical features, so it should not be used on categorical features. The next imputation technique works fairly with categorical features and is very simple, imputation using most frequent values in the data set for the missing values, or the other way of using it is by filling the missing values by zero or some constant as per the knowledge about the data set. One more imputation technique that can be considered is imputation using k-NN i.e. k nearest neighbours. In this the values are assigned on resembles of the data points in the set, whole data frame is required in this technique not just the single column. Imputation using Deep Learning (data wig) is also a very good imputation technique that works very well with the data set of categorical and non-numerical features, it uses Machine Learning model using Deep Neural Networks to impute missing values in the data frame, it is quite accurate than the other methods but is quite slow with large data sets and also it is a single column imputation technique. There are many more such imputation techniques that should be analyzed and used as per their accuracy in fulfilling the need of the missing data values in various data sets which will result in better quality of the Machine Learning model.

Keywords: Imputation, MCAR, MAR, NMAR, and Machine Learning.

A Method for Predicting Academic Performance of Students by Using Modified Particle Swarm Optimization (PSO)

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There are numerous methods for extracting useful information from data. This paper describes a method for predicting performance of students. This method modifies the basic Particle Swarm Optimization (PSO) algorithm using a set of rules. An attribute is selected from a set of performance attributes of the students. This attribute is used to frame rules. These rules

determine the value of a modifying factor. This factor changes the mathematical expression of the function used in PSO for finding the solution. These rules are based on number of students in a particular shift. Other attributes are assigned different indexes. These indexes indicate number of students deviating from average value. The modified PSO algorithm takes the values of these indexes as inputs and generates a solution set which minimizes the values of indexes. A comparison of the solution set given by modified PSO and the solution set with unmodified PSO is presented. A brief outline of the modified PSO is given. The selection of the modifying factor and design of rules is described. These rules are based on the number of students in a particular shift. The different possible classes for the shift attribute are given. Thus a decision strategy for predicting performance is described.

Keywords: Modified PSO, Performance Attributes, Rules, Knowledge Discovery, and Data Mining.

Incremental Learning based Intrusion Detection and Prevention Model for Fog Environment

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Nowadays, Fog computing technology has gained significant attention among Internet users to establish an efficient connection between the Internet of Things (IoT) devices and cloud data centers. The characteristics of the fog computing encounter the different security challenges over the fog nodes or end-users. With the increased type of attacks in the fog platform such as port scanning attack, denial-of-service attack, flooding attack, and man-in-the-middle attack, Intrusion Detection System (IDS) becomes a significant solution. Traditional IDS techniques are inefficient for the dynamic as well as lightweight fog environment. Hence, deploying the IDS techniques in the fog layer is essential to monitor and analyze the access control policies, user information, log files, and so on. Applying traditional machine learning algorithms fail to cope up with the new classes of the attacks or malicious behaviors with the reduced computational effort. Hence, adopting the incremental learning algorithm plays a significant role in modeling the dynamic security mechanism for the ever-changing fog environment. Incremental learning can learn and detect attacks or malicious behaviors in the new classes. Thus, the incremental

learning based IDS is essential for detecting as well as preventing the malicious behaviors in the fog with the increased quality and the reduced storage of the training data.

Keywords: Intrusion, Malicious, Machine Learning, and IoT.

Applying Leaver Concept to Secure Cloud Services in Multi-Tenancy Lower Environment

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The frequently used services of cloud are Software as a Services' (SAAS) applications in Multi-tenancy environment. Mostly public cloud is based on multitenant architecture. Questions related to SaaS application security w.r.t application development and testing, in pre- prod environment are being asked from cloud provider at the time of supplying services to the vendor. In organization at enterprise level any project/module development utilizes few common middleware services in development or testing environment. The developers or testers, who are the part of the projects, need to get access of those common services in respective environment. Depend on the authorization policy, user roles like admin, viewer or sys-admin are getting assigned to the user groups. To get the access of common services the developer or tester needs to be member of the user groups. As the best practices it is required user should not be a member of access group once project/module is over, but at enterprise level it is often noticed that user are not getting removed from the user groups, that in turns leads to the security breach by intended malicious internal user of the organization. To protect the unauthorized access of the SaaS services by the test/Development team member who is no more part of the project, we need to restrict the access by applying leaver concept. This article focuses on leaver concept and presents the process improvement strategy for legitimate SaaS user in pre-prod environment. As per the leaver concept release manager ensures that proposed cleanup script must be executed at the time of project closure. This script will take list of users as input and will remove the username from the user group in lower environment.

Keywords: Authentication, Authorization, Cloud Security, Multi-tenancy, legitimate users, and Pre-prod Environments.

A Fuzzy Quantification Approach for Uncertainty Estimation in Natural Language Text

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Estimation of uncertainty is the key for the social presumptions; it not only the core component but essential for the research design. Uncertainty estimation in the natural language is the qualitative research and provides new prospect research. Uncertainty estimation includes characterizing the uncertainty present in the natural language or qualitative sources of data, such as text, uncertainty evaluation at the level of individual variables; social science texts contain and articulate uncertainty about wide hypothetical constructs and relationships among fact of attention. A consistent approach to measure and estimate this extra uncertainty would assist in the creation of future research. For qualitative research or qualitative sources of data such as interviews, leveraging verbally or textually expressed uncertainty could provide an external mechanism for weighting and validating evidence. Despite the promise of utilizing textual data for uncertainty analyses, uncertainty estimation in text analysis presents a particular problem because of the high degree of dimensionality in the data and because the structure of otherwise useful assumptions constrains analogues to sample-and-population definitions of uncertainty. Previous work on the quantitative analysis of text emphasizes validity and error of classification schemes for text, usually via comparison to human coding approaches. These works quantify uncertainty with respect to our inferences about information contained in text, but do not engage directly with the uncertainty characterized by the words and tone of the corpora themselves. Higher fuzzy quantification techniques for uncertainty identification in natural language can be used for better uncertainty estimation. This paper proposes a method for measuring uncertainty in text with broad applicability to the social sciences. The paper discusses several applications of the proposed approach to address problems in social and political science.

Keywords: Uncertainty Estimation, Natural Language, Fuzzy Quantification, and Uncertainty Identification.

Potential Application of Artificial Intelligence and Internet of Things in Civil Engineering

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The growth of digitization, cybernation, and the expanded utilization of Information and Communications Technology (ICT) has been declared as the fundamental idea of the Industrial Revolution (IR) 4.0. Considering the relative advancement of various industries, the construction industry has been hesitant in incorporating these creative advancements into its basic practices, despite the extraordinary improvements exhibited by different other industries. The application of artificial intelligence (AI) and internet of things (IoT) has the potential to reform structural designing, construction practices, quality assurance, construction management, etc.AI & IoT is one of the possible solutions to the problem of unemployment as it will bridge the gap of "inexperience and unskilled workers". Firstly, meta-heuristic algorithms coupled with machine learning (a subset of AI) can be utilized for the optimization of structures. It not only makes structures more sustainable but also significantly affects the economy of a developing country like India. It is achieved by improving labor productivity, utilizing materials and budget effectively. The meta-heuristic algorithm minimizes multi-objective function and machine learning reduces the procession time significantly. It can also incorporate the errors associated with inexperience and skill of a designer. The multi-objective function must include all the parameters concerning the practicality of construction. India alone generates 165 to 175 million tons of concrete waste every year; part of which is contributed through quality testing and mix proportioning testing. This can be greatly reduced if the properties of concrete can be estimated just by examining the mix proportioning data and batching procedure. It is now conceivable using machine learning as it incorporates all the errors associated with uncertainty. Concrete wastage further can be reduced by shifting over to non-destructive testing (NDT) from destructive testing. Switching has not been possible until now; image processing and machine learning can be used as a unit to attain almost 100% accuracy in NDT's. The real-time monitoring of construction is now achievable, due to the amalgamation of artificial intelligence and internet of things. The artificial internet of things (AIoT) has the capability of detecting any

human or non-human errors occurring during construction activity before it is committed. In A IoT, the internet of things acts as a digital immune system while artificial intelligence behaves like brain; together enhancing productivity, efficiency, and overall outcome. Further, it can be implemented for real-time structural health monitoring (SHM) and has gained much popularity in recent years. Using a IoT for real-time monitoring not only saves money associated with the evaluation of structure but also prevents the loss of life and property before disaster can take place. Dynamic nature of traffic engineering opens up broader horizon for implementation of artificial intelligence. Smart parking system, self-adjusting traffic light, smart lane management, efficient traffic management are few of the promising field that requires the expertise of ICT. Application of AI and IoT in geotechnical engineering has been pondered upon but is yet to see the significant emergence of it. Civil Engineering is still an unexplored ocean with huge scope for artificial intelligence and internet of things. In future, AI and IoT based algorithm can be developed to for real-time structural health monitoring and smart construction process.

Keywords: Artificial Intelligence, IoT, ICT, smart construction and Concrete Wastage.

Challenges in Integrating Cloud with IoT

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The Internet of Things (IoT) and cloud computing are two very distinct technologies that are now part of our lives. The Internet of Things (IoT) is becoming the next innovation associated with the Internet. It enables billions of devices to be linked and interact with each other to exchange information that enhances the quality of our everyday lives. Cloud computing, on the other hand, offers on-demand, easy and flexible network access that enables computing resources to be shared. Mobile Cloud Computing is a new technology that refers to an environment where outside the mobile device both data storage and data processing work. The Internet of Things is a modern technology that is increasingly growing in the telecommunications industry. More precisely, wireless telecommunication-related IoT. The primary objective of the interaction and collaboration between things and objects sent via wireless networks is to achieve the target set for them as a combined entity. Both technologies, Cloud Computing and the Internet of Things,

are increasingly evolving with regard to the field of wireless communication. As disruptive and as an enabler of a vast range of application scenarios, a new model where cloud and IoT are mixed together is foreseen. The advantages of combining IoT and Cloud Computing with an emphasis on the security challenges of both technologies are discussed in this paper. In particular, the two above-mentioned technologies (i.e. Cloud Computing and IoT) are combined to analyze the common characteristics and to discover the advantages of their integration. Many literature works have separately surveyed Cloud and IoT and, more specifically, their main properties, characteristics, underlying technologies, and open problems. However, these works lack a thorough study of Cloud and IoT integration to the best of our understanding, which includes entirely new applications, issues, and research problems. The large amount of tools available on the Cloud can be extremely helpful for the IoT to fill this distance, whilst the Cloud can gain more publicity to strengthen its weaknesses in a more interactive and distributed way with real world objects. In conclusion, we present Cloud Computing contribution to IoT technology. Thus, it illustrates how the IoT feature is improved by Cloud Computing technologies. Finally, we discuss the security issues of IoT and Cloud Computing integration.

Keywords: Cloud Computing, Internet of Things, Cloud of Things, Wireless Communications, Network, Integration Issues, and Security Challenges.

Industrial Application of IoT-Technology in the Automobile Sector

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The Internet of things has been one of the most discussed technology from the few past years. This technology is now presently available in the usable form. The technique still continues to be very popular and itself enables transformational changes in a number of market and sector. The automobile utilities are present around us from long time and it is continuously evolving itself ever since. The foremost expected transformation, which is conversion of vehicle driving by humans to the driving and control by themselves. It will have a long lasting effect on the

automotive sector that is altering exceptionally fast. The idea of autonomous vehicles has occurred a long time ago as a vision of the future, but achievement in this area was restricted due to the availability of limited technologies. Industrial Application of IoT- technologies in automobile sector will set the path for the autonomous vehicles manufacturing industry. The revolution of automobile industry will set a land mark in production of the autonomous vehicles that may play a foremost contribution in the future economy. The IoT application in automobile industry will not only transform this industry, but also promote a healthy competition between automakers and software developers. This will also produce more employment opportunity in both the sectors. From the very beginning, automobile industry is considered as the major environment disturbing players. The implementation of IoT technology with electric fuel in the automobile sector will also resolve the environment related issues. The IoT-technology was introduces in the field of automobile engineering from instigation of internet in public domain. In the present scenario the vehicles have the capability more than the streaming music online but also to notify other network affiliates about the transportation conditions and signals. In near future it is expected that newly launched car models would have standard IoT-connectivity. These enactments would be applied only for the formation of a smart car. The concept of smart city is also based on the utilization of IoT-technology. The IoT-technology introduction into the transport system of a "smart city" provides the facility to improve the safety concerns of public. The effective arrangement of vehicles on the road with the association of IoT-technology provides the economic benefit and energy conservation. It is done by the centralized control and well-timed maintenance. In addition, the communication between vehicles and optimized maintenance are the foremost advantages of IoT-technology used in the cars. The most fascinating utilization of IoT-technology in automobile is its synchronization with smartphones. The Real-time monitoring, Predictive maintenance and fault detection can be done through the smartphone before the emergency condition.

Keywords: Internet of Things, Automobile Sector, and Environment issues.

The Role of Advanced Machine Learning Technique in Environment, Biodiversity and Disaster Management

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Climate change is one of humanity's biggest challenges and we, as researchers in machine learning, may think how we can help. Here we will describe how machine learning can be a powerful tool for reducing greenhouse gas emissions and supporting community adapt to the changing environment. Machine learning is used to healthy energy production and demand in real-time, more realize the potential of ' smart grids, ' decrease complexity, and increase efficiency, energy balancing, and choose sustainable energy storage. Due to environmental change there is a challenge of biodiversity and disaster management. Therefore, advanced machine learning techniques gives a precise solution for the biodiversity challenge and disaster management. Machine learning techniques provides the backbone for applications that can automatically detect changes in soil use in variety with satellite pictures, including coverage and forest analysis, vegetation, and flood monitoring. Machine learning and computer vision are used to monitor and control invasive species by tracking and eliminating them, to identify the presence of invasive species and diseases in plants. Nearly all disciplines store huge amounts of data. Environmental science has very large time series or high-resolution satellite and aerial images are valuable information sources. We get the useful information by using machine learning technique by these data. Our recommendations contain exciting research questions and promising opportunities for business. We call on the world of machine learning to support the global effort to fight climate change.

Keywords: Biodiversity, Climate, Disaster Management, Environmental Science, and Machine Learning.

A Model for Predicting Diabetes Mellitus at an Early Stage

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The poor living standards and sedentary lifestyle has resulted in diabetes being increasingly common in people's daily life. Diabetes mellitus is a chronic disease characterized by hyperglycemia. According to the growing morbidity in recent years, in 2040, the world's diabetic patients is expected to reach 642 million, which means that one of the ten adults in the future will suffer from diabetes. There is no doubt that this an alarming figure that needs great attention. With the rapid development of machine learning and it being applied to many aspects of medical health it has been found suitable to analyze diabetes quickly and accurately. In medicine, the diagnosis of diabetes is according to fasting blood glucose, insulin, BMI, blood pressure, glucose levels. The earlier the diagnosis is obtained, the much easier we can control it. Machine learning can help people make a preliminary judgment about diabetes mellitus according to their daily physical examination data, and it can serve as a reference for doctors to treat the patients. The proposed model will use machine learning to predict the diseases just by entering some parameters and will be very beneficial in terms of cost, time, comfort and efficiency. This model will make testing for diabetes mellitus easier, less expensive and also if the patient is immobile then they can check for diabetes at the comfort of their homes and get diagnosed at an early stage. The dataset that will be used is from the National Institute of Diabetes and Digestive and Kidney Diseases. The primary objective to use this dataset is to diagnostically predict whether or not a patient has diabetes, based on certain diagnostic measurements included in the dataset. Several constraints were placed on the selection of these instances from a larger database. In particular, all patients here are females at least 21 years old of Pima Indian heritage. The model will use various classification models and neural network to predict diabetes mellitus. The classification models comprise of kernel SVM, Random Forest, XGBoost, K-NN and Artificial Neural Network. The predictor model will be deployed using Flask and HTML in the form of a website which everyone can use. It will be tested on a data of 769 patients and the machine learning model with the best accuracy will be chosen for prediction of Diabetes Mellitus.

Keywords: ANN, Diabetes Mellitus, Prediction, and Machine Learning.

Weapon Autonomy: Greedy Algorithm Selecting & Attacking Perspective

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The underlying most legal, moral and other codes of assumption that when the decision needed take life or to save people to other serious consequences is on stake, the power of decision-making should be exercised by humans. Morally it matters, the ability to consistently behave in a positive way to specify the level of performance. The 'Perspective' it comes in, human or the machine level, is to be the deepest moral principle. Weapon dependence or selecting systems with significant autonomy is the serious functions of selecting and attacking targets are already in use. Today these weapons tend to be extremely controlled in the tasks they carry out (e.g. self-protective rather than attacking operations) This is the recognition of the significance of maintaining human switch over selecting and attacking targets, although there is less clarity on what would constitute 'meaningful human control'. Some suggest that 'fully autonomous' weapon systems, by definition operating without human supervision, may be useful in very limited circumstances in high-intensity conflicts. However, autonomous weapon systems operating under human supervision are likely to be of greater military utility due to the military requirement for systematic control over the use of force. However, the closer examination of these existing weapon systems may provide insights into what level of autonomy would be considered acceptable and what level of human control would be considered appropriate. Autonomous weapon systems that are highly refined and programmed to independently determine their own actions, make complex decisions and adapt to their environment (referred as "Weapon Autonomy: Greedy Algorithm Selecting & Attacking Perspective" using "Machine Learning") do not yet exist. While there are different views on whether future technology might one day achieve such high levels of autonomy, it is notable that today machines are very good at quantitative analysis, repetitive actions and sorting data, whereas humans outperform machines in qualitative judgment and reasoning. Greedy is an algorithmic paradigm that builds up a solution piece by piece, always choosing the next piece that offers the most obvious and immediate benefit. So the problems where choosing locally optimal also leads to global solution

are best fit for Greedy. While there are different views on whether future technology might one day achieve such high levels of autonomy, it is notable that today machines are very good at quantitative analysis, repetitive actions and sorting data, whereas humans outperform machines in qualitative judgment and reasoning.

Keywords: Autonomy, Greedy Algorithm, and Machine Learning.

Potential Application of Big Data and Machine Learning To Preempt Cyber Attacks

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As the technology advancement has been observed we have also experienced a huge amount of Cyber Security Threats that are exposed to a single individual and at the same time organizations are also affected. Advanced threats represent the greatest information security threat to enterprises today. As cyber threat continues to grow, the need for greater advancement in cyber security strategies has increased. The companies need to protect their sensitive data from the risk of being stolen or misused. An approach widely used by the companies is to use a combination of Big Data and Machine Learning. Big data can store a large amount of data and help to analyze any sort of irregularity within the network. Machine learning is the branch of artificial intelligence that uncovers hidden patterns in complex data. Machine learning algorithms work more effectively in case of large amount of data. The role of machine learning is to work along with the big data to detect any kind of cyber security threats and to help prevent similar type of attacks in future by actively responding to attacks in real time. Human analysts cannot match the scale and pace derived by automating the analytical model building. The Real-World application of Big Data and Machine Learning are in the field of Healthcare, Retail, Financial Services and Automotive. As machine-learning technologies have hit new levels of maturity in the recent years, smart businesses are shifting their approaches to big data. Across industries, companies are reshaping their infrastructures to maximize intelligent automation, integrating their data with smart technologies to improve not only productivity, but also their ability to better cater to their customers.

Keywords: Machine Learning, Big Data, and Cyber-attacks.

A Comparative Study of Cloud Computing Models

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Cloud computing involves delivering of computing services on-demand by the user. This includes all services right from storage to processing power. These services are provided over the internet on a pay-as-you-go basis. So users need not to own a computer or any computing infrastructure. They can access these facilities from a cloud service provider. Due to this, firms can avoid the cost and complexity of owning and maintaining their own computing or IT infrastructure. This can add to the profitability of a firm and lead to optimization of resources in a firm. They have to simply pay for what they use, when they use. When customers procure these cloud services, the cloud service provider can provide these services using advanced automation. The key features of this cloud computing are agility, cost reduction, device and location independence, easy maintenance of cloud applications, multitenancy, scalability etc. The cloud computing service providers can provide infrastructure as a service (IaaS), platform as a service (PaaS) and software as a service (SaaS). The deployment models used commonly for cloud computing are Public, Private, Hybrid and Community. In Private cloud, the cloud infrastructure is operated solely for a single organization. In Public cloud, services are delivered over the public platform like Internet. While Hybrid cloud is a composition of a public cloud and a private environment, such as on-premises resources. Community cloud shares infrastructure between organizations from a specific community with common concerns or objectives. In this paper, these four types of cloud models (Public, Private, Hybrid and Community) are studied and compared. This paper highlights the key points and features of these models. The paper also discusses the drawbacks and advantages of these cloud models. The paper further discusses the scope of development of new models for deployment purpose. The paper suggests developing new model by taking the positive aspects of all these models. The suggested model will be multipurpose and will be able to cater a wide range of organizations and variety of applications. The adopting organizations can be directly benefitted from this new model. The paper also suggests the ways optimize the use of cloud services. Cost and resource effective solutions are

suggested for this purpose. The paper gives several other ideas for improvement in the existing cloud deployment models and their usage.

Keywords: Cloud Computing, Hybrid Cloud, and Scalability.

A Review on Blue Eyes Technology

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Blue Eyes is an innovation, aiming to create computational machines that have perceptual and tactile capabilities similar to those of individuals. The fundamental idea behind this innovation is to give PC manpower. This is a great technique for this era where we can prepare humans to discover fundamental emotions. This strategy allows PCs to discover human artifacts that work like our PCs. It recognizes confusion and interests within a few seconds through this blue-eyed innovation. This innovation is for PCs, similarly a partner of a better organization can have a part of a person on the planet and they can talk, hear and so on this innovation activities and emotions can be identified to the camcorder using emotions. The manual and gaze input cascade, artificial intelligent speech Upgrades are used for recognition, simple user interest trackers, eye development sensors. Its principle applications are automobile industry, video games, medical diagnostics, lie detector testing. It is a rising creativity, and it was to narrow the gap between the real world and the electronic future. This paper discusses the strategy, known as the Emotion Sensory World of Blue Sense Innovation, which pathetically recognizes human emotions by separating the eye parcel from the captured image, which then does the opposite and keeps the information base photographs away. The tune will be played to differentiate the human spirit in view of different nature.

Keywords: Blue Eyes, Emotions, DAU (Data Acquisition Unit), CSU (Central System Unit), MAGIC (Manual and Gaze Input Cascaded), and Simple User Interest Tracker (SUITOR).

Data Science and Machine Learning in E-Commerce

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Data science and Machine Learning has become a go-to term for every industry, starting from E-Commerce to healthcare and transportation. And each sector uses data science in E-commerce for different purposes while that percentage increases to a massive 288% after the first interaction. Besides enabling personalization, data science technologies can benefit E-commerce retailers and solutions in multiple ways, as detailed in this abstract. E-commerce Security is a part of Information Security of the framework and is specifically applied to the component s that affect e-commerce include Computer Security, Data security and other wider realms of the Information Security framework. E-commerce security has its own particulars nuances and is one of highest visible security components that affect the end user through their daily payment interactions with their business. Privacy concerns have been found, to revealing a lack of trust in a variety of contexts, including commerce, electronic health records, the e- recruitment technology and social networking, has directly influenced users. Security is one of the principal and continuing concerns that restrict customers and organization engaging with ecommerce. Predictive forecasting and intelligence enabled by artificial intelligence (or AI) is technique that can disrupt E-commerce sales forecasting on the basis of big data and seasonal indicators. For example, AI technology can use the current weather forecast data to predict the short-term demand and sales trends. To make its predictions, predictive forecasting uses a variety data sources including history of previous sales. Economic Indicators, customer searches, demographic data apart from the business benefits of personalization, Big data analytics can be beneficial in determining customer behavior and shopping patterns. Customer Lifetime value benefits E-commerce retailers in the multiple ways, Including determine the right marketing strategies. Determine the average cost of acquiring customers or Customer Acquisition Cost Set business objectives for future growth, expenses, revenue, and net profit. Personalize customer purchases through up selling and cross selling. Optimize business spending on marketing campaigns and online advertisements the set of items the customer purchases are known as an item set, the conditional probability that a customer will order main course after starters is

known as the confidence. Selling a product at the right price, not just for the customer but also for the retailer or manufacturer is an important task. The price must not only include the costs to make the product but also the ability of a customer to pay for that product keeping in mind competitor prices as well. All of this is calculated with the help of machine learning algorithms which analyzes a series of parameters like the flexibility of prices, taking into consideration the location, buying attitudes of an individual customer and competitor pricing. It then comes up with the optimal price that can benefit all the parties. This is a powerful tool for retailers to market their product in the right way with optimal pricing.

Keywords: ICT, E-commerce, Machine Learning, and Artificial Intelligence.

Agricultural Big Data Processing and Storage

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Smart Farming may be a development that emphasizes the utilization of data and communication technology among the cyber-physical farm management cycle. New technologies just like the internet of Things and Cloud Computing unit expected to leverage this development and introduce extra robots and computing in farming. This is often encompassed by the event of huge information, massive volumes of data with a decent choice which can be captured, analyzed and used for decision-making. This review aims to realize insight into the progressive of huge information applications in smart Farming and establish the connected socio-economic challenges to be addressed. Following a structured approach, an abstract framework for analysis was developed which can even be used for future studies on this subject. The review shows that the scope of huge information applications in smart Farming goes on the way aspect primary production; it's influencing the complete food supply chain. Brobdingnagian information unit being used to provide divinatory insights in farming operations, drive fundamental measure operational choices, and style business processes for game-changing business models. Several authors thus counsel that massive information will cause major shifts in roles and power relations among utterly totally different players in current food supply chain networks. The landscape of stakeholders exhibits a noteworthy game between powerful school corporations, venture capitalists and typically very little start-ups and new entrants. At constant time there unit several

public institutions that publish open information, below the condition that the privacy of persons ought to be secured the long run of fine.

Keywords: ICT, Communication, and Geo

Cloud Computing in Geospatial Applications

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For many years, access to databases, networks, net services, and varied different computing resources at public transportation agencies was mostly restricted to transportation agency workers. As computing technologies have evolved, the term "cloud computing," normally noted as "the cloud," has emerged to explain the way of linking these resources via the net to produce over merely the way to exchange info, the cloud additionally permits agencies to share process and visualization tools. This permits agencies to gift information in a very a lot of interactive manner than with ancient data-sharing mechanisms, presenting opportunities for distended sharing of geospatial info. To explore however transportation agencies are victimization the cloud to support geospatial applications, the Federal road Administration (FHWA) and also the Volpe National Transportation Systems Center (Volpe Center) interviewed choose transportation agencies and developed a series of case studies specializing in their experiences victimization cloud-based applications.

Keywords: ICT, Communication, and Geo

Artificial Neural Network: An Industrial Application

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Various process and control plans depend on a portrayal of the dynamic connection among circumstances and logical results factors. One potential methodology for accomplishing this is through the improvement of existing process observing and control systems. In such plans, this portrayal is ordinarily approximated utilizing some type of straight unique model, for example, limited motivation reaction (FIR), autoregressive with exogenous variable (ARX) and auto-

backward, moving normal with exogeneous variable (ARMAX) models. When decided the dynamic process model of the framework can be coordinated inside an assortment of process observing and control calculations. In measure control, for instance, the model can be fused inside a model based prescient control (MBPC) calculation, for example, Generalized Predictive Control. For measure observing, the residuals (forecast blunders) from such models can be broke down to recognize irregular activity. Such checking and control plans have discovered inescapable application in industry and have prompted huge upgrades in measure activities. Appallingly, the models utilized inside the plans will in general be straight in structure. Albeit direct models can give adequate execution to numerous frameworks, they might be unsatisfactory within the sight of huge non-linearties. For such frameworks it might be gainful to utilize a model that mirrors the non-straight connection among circumstances and logical results factors. Primer investigations have shown that fake neural organizations (ANNs) may give a nonexclusive, non-direct answer for such frameworks. Similarly as with standard straight demonstrating methods, ANNs are equipped for approximating the dynamic connections among circumstances and logical results factors. The straight methods are that as it may, ANNs offer the advantage of having the option to catch non-direct connections. Since the exhibition of process checking and control calculations are needy upon the exactness of the model inserted inside them, ANN models can possibly give advantages to these calculations when applied to nonlinear frameworks.

Keywords: Artificial Neural Network, ANN, MBPC, and Predictive Control

IoT Based Air Pollution Monitoring System

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The level of pollution is increasing day by day due to rapidly increasing number of industries, heavy smoke, urbanization, increasing in population, vehicles (except electric vehicles) that affect human health and lots of diseases emerges daily. IOT Based Air Pollution Monitoring System is used to monitor the Air Quality using various sensors like (ammonia, LPG, methane, etc.) over a web server using Internet. It will trigger an alarm when the air quality goes down beyond a certain level and also send E-mail, means when there are sufficient amount of harmful

gases present in the air like CO2, smoke, alcohol, benzene, and NH3. It will show the air quality in and as well as on web-page so that air pollution level, bar graph and pi graph in order to monitor very easily. The system uses MQ135, MQ7and MQ6 sensor for monitoring Air Quality as it detects most harmful gases and can measure their amount accurately. A prototype for an Environmental Air Pollution Monitoring System for monitoring the concentrations of major air pollutant gases has been developed. The system uses low cost air-quality monitoring nodes comprises of low cost semiconductor gas sensor with Wi-Fi modules. This system measures concentrations of gases such as CO, CO_2, SO_2 and NO_2 using semiconductor sensors. The sensors will gather the data of various environmental parameters and provide it to raspberry pi which act as a base station. Realization of data gathered by sensors is displayed on Raspberry pi 3 based Webserver. A MEAN stack is developed to display data over website. The fundamental aspect of proposed work is to provide low cost infrastructure to enable the data collection and dissemination to all stakeholders. Air pollution is a mixture of solid particles and gases in the air. Car emissions, chemicals from factories, dust, pollen and mold spores may be suspended as particles. Effect of air pollution has many bad things and the others may cause problems to our health, for instance, asthma, cough, and lung disorders. In addition, the pollutant can cause global warning, acid rain, and disturbing plant growth. Thing speak is chosen and there are many open source IoT supporting platforms. At the end, data analysis was done on the data set collected from the setup which is installed at various places across the VIT University, Vellore. This analysis helps in deeper understanding of the air quality status such that people will be aware of what will happen if the same air quality continues for a longtime.

Keywords: Air Pollution, MQ135 Sensor, IOT, and Arduino Uno.

Neural Interface: A Bridge Between Human and Machine

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Neural Interfacing is a powerful way to develop a robust bridge between humans and machines. We emphasize basically on Neural Interfacing as an evolving trend in Wireless Communications by taking into account one of its important Application i.e Cyborgs. We will be discussing the operational features of Cyborgs with the experiments conducted and proposed to be conducted in

future and in this process, give a brief description of the advantages and disadvantages of this technology. Attachments and interfaces mediate our interaction with the environment and usually are positioned on the surface of the body. Physical objects, called as Tools or Attachments, while information utilities, are called as Interfaces. In the same way a Neural Interface allows a human brain to communicate directly with a computer, without any other equipment. This kind of interface allows any illusions to put into the Human Nervous System. Neural interfacing fantasies have mainly grown out of science fiction. These are used for paralyzed persons so as to communicate with the outer world with the system attached for their body. The design of the Brain Interface System as well as how they are implanted to paralyzed persons.

Keywords: Wireless communications, Cyborgs, and Illusions.

Use of Information Technology (IT) in Education Services with Cloud Database

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Today's world is of information technology, so it has become extremely necessary to keep everything in touch with computers. With advancement in science & technology, the new working phenomenon has been arisen. In our country, mostly in the city areas various online systems are being used for various purposes i.e. everything is computerized to save are time & efforts. It also saves our paperwork. Most of the organizations such as Hospitals, Railways, Airways, Companies, Colleges, etc. have developed & moved forward due to this computerization. Most of the organizations are still doing work manually. i.e. through paperwork or documentation. And other organizations are there where some static softwares are used for maintaining data, but these softwares required more space in these computer. It is a very tedious job to keep all the records & other related transactions through the registers. It consumes a lot of time & man-hours for storing, accessing & maintaining this information. The aim of this project is to provide software for "Computer Institute" which provides the organization a procedural approach for storing all its data and records into a single data base. All the students' details and

staff details are stored and can be modified easily and very efficiently. This software will take very less space from your computer because this project is about cloud base storage.

Keywords: Technology, ICT, Agricultural, Digitalization, and Computerized

Safety Assessment of Health Care Covid-19 in India: Assisted the Fuzzy Logic Approach (FIS)

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In early 2020 month of December, a novel coronavirus, called Covid-19 was discovered in the city of Wuhan china and also spread various cities as well as other countries. At the present day novel coronavirus becomes the most important for health, causing severe issues about concern to the being human and this is becoming the pandemic. Due to the prone of Covid-19, uncertainty is more significant for facility a health condition. There are solutions to handle with insecurity about health from Covid-19 for assessing the condition through FIS (Fuzzy Inference System). Therefore, the particular reason study to develop the fuzzy system to help assess the safety of health related the patient condition according to the changes of environment. The FIS is permitted to assessing the patient's history like that temperature of the body, travel history, disinfection frequency, breathing problem, suffering the cough and cold, and ventilation rate. Fuzzy system is consists the several steps fuzzyfication, fuzzy database rule, and also defuzzyfication. Furthermore, study of FIS identifies the risk of health status according to the patient's condition. In this paper, we proposed a fuzzy rule system which is implemented with MATLAB fuzzy tools for the simulations to assessing the health condition of patients and prevent from the Covid-19pandemic.

Keywords: MATLAB, fuzzy, and pandemic.

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Track 5
Blockchain Technology

Advancing Towards Secure Digital Economy: An Introduction to BlockChain Technology

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Blockchain can be defined as a decentralized and distributed digital ledger technology (DLT) that allows the data to be duplicated and stored on a global level over a vast number of servers. It is a time stamped approach that keeps a permanent record of all transactions in such a way that it is secure, chronological, and immutable. Time stamping the digital records helps to save them from backdating or tampering. The technology was initially introduced to solve the double records problem without the need for a central server. Blockchain as the name itself indicates is a chain of blocks which comprises information. The data is basically stored in these blocks depending upon the type of blockchain. There are three basic components of a blockchain namely, Blocks, Nodes, and Miners. Each block contains the basic data, Hash, and Hash of the previous block. Miners are used to creating new blocks of the chain. Nodes are a cluster of electronic devices that maintains a copy of the blockchain and keep it network connected. Here, each node has its own copy of the blockchain and it is the responsibility of the network to update the node information every time a block is mined and added to the blockchain with proper verification. Hence Blockchain uses a peer-to-peer network where no third-party is included in any activities and thus helps in creating a consensus. Another important concept which is used in the blockchain is the cryptographic keys. These keys help in carrying out a secure and successful transaction between two parties by using a secure digital identity reference which is also called 'Digital Signature' and is used for authorizing and controlling transactions. Blockchain Technology was mainly introduced to serve as a backbone of the very famous cryptocurrency in the world-Bitcoin and this is the main cause of its popularity. Bitcoin is basically is peer-to-peer Electronic Cash System. Blockchain not only helps users to carry out a transaction using crypto-currencies but also ensures the security and anonymity of the users. The next major impact is that it has created a decentralized peer-to-peer network for organizations or applications like Airbnb, Uber which allow people to pay for things like toll fees, parking, etc. It can also be used as a secure platform for Healthcare Industry mainly to store sensitive patient data. Some fields where

Blockchain Technology can successfully be deployed are Smart Contracts, Crowd funding, Governance, Supply Chain Auditing, File Storage, Prediction Markets, Protection of Intellectual Property, Anti Money Laundering, and more. In the near coming future, the Blockchain founders are trying out numerous other applications to expand Blockchain's level of technology and influence. After observing its success and enhanced use, it seems that blockchain will rule the digital world. However currently there is no Blockchain network in existence still that could sustain the same amount of transactions as major card issuers as Visa or MasterCard do. As of 2017, Blockchain still have a long track to cover and replace the existing giants of the financial world.

Keywords: Blockchain, Digital Ledger, Bitcoin, and Cryptocurrency.

Applications of Blockchain in Digital Life: A Systematic Review

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The technology that has the most impact on our lifestyles in the last decade is Block Chain. A word that often arises when talking about Blockchain is Bit Coin. Many people still confuse Blockchain with Bit Coin; however, they are not the same. Bit Coin is just one of many applications that use Block Chain technology. A Block Chain is a method of storing a list of entries, which can't be changed easily after they are created. Blockchain uses a wide network to keep track of digital transactions, such as Crypto currency, it's referred to as a Chain because additions or changes added linearly and connected together. This means the Blockchain cannot be surreptitiously edited or changed. Once the transaction is encoded in the Blockchain and becomes part of the network, the parties cannot reverse or alter it without mutual agreement. This also applies to the list. This is done by using several concepts from Cryptography including Digital Signatures and hash functions. A Blockchain is made up of two primary components: a de-centralized network facilitating and verifying transactions and the immutable ledger that network maintains. Blockchain is the data structure that allows Bit Coin (BTC) and other up-and-coming crypto currencies such as Ether (ETH) to thrive through a combination of de-centralized encryption, anonymity, immutability, and global scale. Crypto currency, an

encrypted, peer-to-peer network for facilitating digital barter, is a technology developed eight years ago. It is a medium of exchange, created and stored electronically in the Blockchain using encryption techniques to control the creation monetary units and to verify the transfer of funds. Bit Coin, the first and most popular crypto currency, is paving the way as disruptive technology too long standing and unchanged financial payment systems that have been in place for many decades. Bit Coin is an innovative technology that offers several benefits, such as fast transaction speeds, low costs, and the elimination of the need for a third-party intermediary to process transactions.

Keywords: Block Chain, Crypto currency, and Bit Coin.

Transforming the Face of Digital Health: Blockchain being the Ultimate Solution

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With the advent of mobile technologies and advances in information and communication technologies (ICT) in our lifestyle, the past decade has witnessed an emergence of a variety of digital technologies such as smart computers, wearable devices, smartphones, digital cameras, robotics, video streaming, social media platforms, massive digital datasets that has led to the digitization of a number of practices being digitized. The advances in digital technologies have resulted in adaptation of these in almost every field of our everyday life. Domains related to healthcare are also adapting to Digital Health. Digital health is defined as a terminology that encompasses a wide range of technologies related to health care. A variety of these technologies such as social media platforms, apps, smartphones and smart objects have enabled health practitioners to collect data related to health and medical significance, sharing the medical data over a network of professionals and patients, providing healthcare services through digital media, and monitoring various health-related activities, illnesses and disease outbreaks. This has resulted in an ample amount of patient related data that is generated and needs to be managed efficiently. While Big Data being the obvious choice to manage this large set of data, a huge concern lies around data privacy and safety for this medicine and public health data. A

blockchain is defined as a database of records that are located in a distributed network of personal computers called nodes. It more specifically is a shared, immutable record of peer-to-peer transactions built from linked transaction blocks and stored in a digital ledger. It is not owned by any single entity i.e. it is decentralized. The data in a blockchain is available publicly, however it is accessible to those that have permissions or access rights for the same. Multiple industries are adopting the blockchain technology to innovate the way they function. One of the industries that are looking to adopt the blockchain is the healthcare industry.

Keywords: Blockchain, Big Data, Information and Communication Technology (ICT), and Digital Health.

Performance Based Analysis of Blockchain Scalability Metrics

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Blockchain Systems (Distributed Ledger Technologies (DLTs)) uses a digital ecosystem unlike traditional ecosystems with intermediary. Cryptocurrencies like Bitcoin and Ethereum are the first widely known uses of blockchain technology, have drawn much attention and are largely accepted in recent years. But the performance these public blockchains is notoriously slow than centralized payment processing networks such as VISA. Bitcoin and Ethereum processes approximately 7 and 15 transactions per second whereas VISA processes 1700 transactions per second. The scalability of blockchain is measured in terms of transaction and number of participants involved in processing them. But the stumbling block for growing interest in these blockchain technologies, from both researcher's and enterprise's point of view is scalability. This paper attempts to present the existing scalability solutions which are broadly classified into three layers: Layer 0 (Data Propagation), Layer 1 (On-chain Solutions) and Layer 2 (Off-chain solutions). Layer 0 solutions focuses on optimization of dissemination /propagation protocol for transactions and blocks in the blockchain network. Layer 1 solutions concentrate on the consensus algorithms and data structure of the blockchain (size of block). Layer 2 aims to decrease the load of the main chain by implementing solutions outside the chain. In this paper,

we propose a classification of existing blockchain scalability solutions and comparison among solutions on the basis of performance, advantages and disadvantages.
Keywords: Blockchain, Data Propagation, Cryptocurrencies, Bitcoin, Ethereum, and Consensus Algorithm.

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Track 6
ICT Role in COVID-19 Pandemic

Integrating ICT Systems to Control Spread of COVID-19 in India

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Coronavirus pandemic has caused a major strain on the finances and functioning of educational institutions. Although much of their work was physical, the pandemic has forced them to incorporate their institutes into the new Information and Communication Technology (ICT) platforms. There is a need for careful diagnosis, surveillance, and follow-up during the pandemic. The key issue is the reduction and control of COVID-19. As a result, the pandemic has changed primitively and rapidly how educational institutions offer education to students.

Institutes are now reacting to COVID-19 through meteoric adoption of digital tools and innovations such as websites, dashboards, mobile apps, robotics, artificial intelligence, and virtual classrooms. All of these apply to the delivery of classes either digitally or remotely using Information and Communication Technology (ICT). It is required to provide timely and sound education while minimizing vulnerability to the safety of teachers and students. This study offers an analytical guide focused on how to use telecommunications and virtual classes during the COVID-19 pandemic. This study explores the implications for the potential of offering virtual classes to incorporate new technology into education. This will help to have a range of implications for the successful use of current ICT resources and future potential scientific and technical advancement to contain coronavirus or any future pandemic.

Keywords: Covid-19, ICT, and Educational Institute.

Exploring the Potential of E- Learning and Other ICT Programs in Midst of Coronavirus Pandemic

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The outbreak of coronavirus disease (COVID-19) has impacted millions of people and threatened their life across the world. In a country like India, our education system was never very efficient even in the best of times. The COVID-19 pandemic has rendered it extremely biased and faulty. The government of India and others are taking all necessary steps to ensure that we are prepared well to face the challenge and the threat of COVID-19. One of the necessary steps is the timely imposition of lockdown to stop spread of the virus. The study provides implications of the significant role of e-learning in the COVID -19 pandemic. In a time of crisis, technology plays a vital role in creating fertile opportunities for the transformation of teaching and learning. The present technology is playing a great role during the present crisis. E-learning with help of ICT tools has been helping the learners to study at home. E-learning is considered a new method of teaching rather than face to face teaching, with e-learning the educational institutes can offer and share materials in all formats including slide shows live classes, videos, PDF, and Word documents. The educational institutes have been prompt in implementing these technologies including mobile applications, virtual classes for providing timely and uninterrupted education to the learners. This study reviews the concept of e-learning, its features, and the role of it in teaching and learning. Here the researcher shows the role of ICT and e-learning in changing the way of teaching in this pandemic.

Keywords: ICT, E-Learning, and COVID -19.

Use of Novel DNAFIDs Technique in Target Identification in Epidemic: COVID-19 Scenario

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A number of countries have well thought-out or are making an allowance for again their approach to a form of ID card. Since the 9-11 attacks the preponderance of national polls showed that approximately two-thirds of the American public was in favor of a U.S National identity card. Conversely, notwithstanding the support for ID cards, there are upward fears about the promising loss of privacy, freedom, and that the new technology could amplify police power more than it should be. Civil liberties groups have warned that resident identity cards could palpable make straightforward information sharing among government agencies and consequently increase police power significantly. The ID card issue is one that is discussed and debated on a regular basis in the media. Governments set your mind at rest its citizens by introducing "smart" ID cards or advancement existing. Focus of the researchers in recent years has been missing to below of the years related to User Identification System using DNA Based Identification System. Scientists, academics and researchers have worked throughout the world in pursue of a single and effective identification system to overcome problems of all current system. We propose a different approach or technique of solving such clinical problems which is proper study of natural current user identification and generation of Universal identification system using DNA fingerprinting over a target over a period of time. This technique will also be better in terms of identifications of Hot Areas and Effected people of COVID19 scenario. This DNA fingerprinting based User Identification System or DNAFIDs application may open new dimensions of research and tackling the problem of COVID19. Further experimental observations will proof the proposed hypothesis. We propose a different approach or technique of solving such clinical problems which is proper study of natural current user identification and generation of Universal Identification System using DNA fingerprinting over a target over a period of time. This DNA finger printing based User Identification System or DNAFIDs application may open new dimensions of research in fields of clinical research.

Keywords: Smart Card, DNAFIDs, and COVID19.

ICT and Education: A Transforming Reform during COVID-19 Pandemic

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The world is currently gripped by the deadliest and most widespread pandemic it has ever faced over a century. The continuous death rates feared the society and the whole world, not only financially but also emotionally. COVID- 19 has become a huge challenge for everyone but in the mist of this turmoil, ICT has played an integral part in providing the safe relief and treatment of the affected society all around the world. When society assumed that the life was not possible, ICT shows its capability to deal with this hard situation and even resolved the secondary challenges that emerged within a society with socially distanced environment. Not only this, it showed the way for combatting with the future pandemics also. The ICT initiatives taken to combat COVID-19 has encouraged every individual, organization in dealing and providing the solutions. Due to ICT the particular benefit have been taken by Mobile application and Artificial Intelligence based tools which provide a way to deal through this situation. The world was learning new technologies from many decades but the transformational impact was experienced during this pandemic time. One of the first ever posts on the EduTech blog, "Education & Technology in an Age of Pandemics" , reported how teachers and learners used new technology to adapt when schools, colleges and universities were closed due to outbreaks like , 'Swine flu' in Mexico, 'bird flu' in China, 'Ebola virus' in West Africa. Then many education reformers helped the people there with the use of Information and Computer Technologies (ICT's). And now also ICT has become a boon for the whole world. It plays a crucial and integral role in changing the current education system including teaching and assessment methodologies. During COVID-19, there was high growth and adoption in education system. The Global edtech investments and the overall market for online education are projected to reach $350 Billion by 2025. With the help of ICT, 24,000 online courses have been initiated; 37 million students in India's higher education sector alone are taking online education, many schools and universities launched e-learning and e-teaching opportunities. The institutions and schools changed the physical classes to online classes through television, Facebook, YouTube, Telegram and websites. We were able to bring the classes to the doorstep for the students with the help of ICT,

providing learning resources like video conferencing applications such as Zoom, Google classrooms, Webex, e-mails and social media. Through online resources, educators and learners can access information, created supportive environments for education and providing professional development opportunities also. ICT becomes a principal component of pedagogy in the 21st Century tools. I being in this education sector have experienced how ICT has played an important role in fostering the student learning process. In order to initiate the e-learning process, we taught the parents how to use technology. Provided the necessary trainings to students as well as parents how to ensure safe learning with the help of ICT. I being a computer teacher was able to bring the practical classes online in more better and interesting way. Helped my co-staff learning the use of PowerPoint presentation, creating and editing videos, using Google Docs for sharing and uploading the videos, making teaching learning process more effective. I would say this pandemic has changed the way of teaching and learning. It allows me to reach out to my students more proficiently and effectively through WhatsApp groups, Video conferencing and document sharing. Researches show that students retain 25-60% more knowledge while learning online as compared to only 8-10 % in a classroom; e-learning requires 40-60 % less time to memorize the knowledge than in traditional classroom because students are learning at their own pace, going back, re-reading and re- playing the video lectures.

Keywords: COVID- 19, ICT, Education System, and E-Learning.

ICT: As a Corona Warrior for Education

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This study emphasizes on the current circumstances of education in the context of the global pandemic affected by COVID-19. The global health emergency situations have caused the quarantine of people and with it, the closure of centers and the transmission of face-to-face education to online education. Confronting with these truths, educators have to adapt not only to new modern organizational approaches but also to their own quarantine, managing high levels of stress. The entire educational system from fundamental to a high level has been malformed at the time of the lockdown period of the novel coronavirus disease 2019 (COVID-19) not only in India but across the worldwide. According to United Nations Educational, Scientific, and

Cultural Organization (UNESCO) data as of 3 May 2020, almost 1.2 billion students and youth across the world were affected by the closure of schools and universities due to the outbreak of a pandemic. Information and communications technology (ICT) play a crucial role in most organizations these days. Due to ICT's importance in the current society and in the forthcoming of education, recognizing the probable challenges to incorporating these approaches and technologies in the institute would be an imperative step in refining the quality of teaching and learning. The Covid-19 pandemic has raised significant challenges for the higher education community worldwide. It's a very challenging and surprising request for previously face-to-face institution courses to be educated online. The government of India started thinking gravely on this matter by emphasizing on ICT and the use of online education as the part of compulsory teaching-learning process at the tertiary level. There are various complications handled in the implementation of the transformation practice in the existing education system that has been stand up after COVID-19 pandemic; these problems are associated with the different perceptions of the online education system and their different technological difficulties. Before this pandemic, online education is known as the education or training delivered by the open universities in India. But during this pandemic situation, online education became a great challenge to deal with, and the organizational bodies are not actually fit to amend with the unexpected educational change as they are not technologically proficient to embrace the current situation. Everyone, either teachers or students, were friendly skilled in using social media app like WhatsApp, Facebook, Twitter, Instagram, which revolved into smooth enabling of using online educational platforms like ZOOM, WebEx, YouTube/ Facebook Streaming, Google Meet and Learning Management System like Moodle etc. as a sign of positive transfer of learning. Also, there are some useful educational apps such as Office 365, Google Classroom, and much more user-friendly. In the perspective of the Indian scenario, initially, some individuals and organizations were facing some issues for incorporating ICT into teaching and education. Generally, the imperative concerns and challenges found to be significant in using ICT tools by teachers were: limited accessibility and network connection, incomplete technical support, absence of constructive training, and deficiency of teachers' competency. For advanced education organizations around the globe to be modest, confirmation of faculty awareness in terms of professionalism is necessary. Online teaching is an essential part of such professional preparedness but not the only one. Universities, now more than ever, should invest in teacher

professional development of their faculty, for them to be updated on effective pedagogical methods with or without the use of online approaches and technologies.

Keywords: ICT, E-Learning, COVID-19, and Online Teaching.

Enhancing Learning via Acceptance of Technology: A Study Among Students in Lucknow

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Rapid changing elements of environment have lead to numbers of changes in today's educational world. Role of information and communication technology (ICT) has amalgamated with every domain inclusive of education. Boosting system of Higher Education Institutes (HEIs).Thought out the world are opting for ICT in various forms to add values towards learning, teaching systems (LTS) and experiences of their faculty and learners. As in comparison with traditional classroom settings and features, technology enhanced learning (TEL) has outlaw the limitations of old and traditional learning. Adding new horizons to expand the intellectual territories of institutions without adding barriers to physical elements and boundaries. In fact the OERs and the launch of numerous MOOCs by several universities has added values to quality education which is accessible to all. However, traditional and simply learning system with a Web-based learning does not guarantee usage of knowledge and effective learning in society. The current changed dimension has added growth of virtual learning environment and lead to debates for its effectiveness. As in lock-down the learning management system (LMS) has received fairly extensive attention from practitioners and information system (IS).This has encourage researchers to effectively use the technique of F2F in which lectures are delivered through online learning module (OLM). Past studies have provided mixed impact value on students in developing nation, As compared to nation with developed channel for education system.Use of ICTs in educational institutions still faces boundation especially in HEIs education modules which has lead to many situations (social, economic and technological). In Bharat, traditional methods of face to face teaching and mentoring is still embark itself in HEIs, but the emphasis on digitalization still high to up-gradation of ICT infrastructures and other elements of digital educational system with 24x7 access of the Internet to students. The importance of OERs has been recognized by India too, and various programs like the Open Source Courseware

Animations Repository, the National Science Digital Library, and National Programme on Technology Enhanced Learning (NPTEL).

Keywords: National Programme on Technology Enhanced Learning, Socioeconomic, Open Educational Resources, and Open Educational Resources.

Online Teaching Pedagogy during COVID-19 Pandemic Outbreak

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As the entire world is fighting against COVID-19 pandemic, our education system is facing countless challenges. But the crisis is always paired with opportunities, and it's time to utilize the full potential of technology to ensure continuity of learning by staying safe at home. Online teaching and learning have a certain pedagogical content knowledge (PCK), mostly related to design and organizee-content for enhancing learning experience and distinctive learning environments, with the help of digital technologies. To navigate in these challenging times, we end with a reflection on how to respond to a crisis in the post digital era. Online Education System has played a vital role in handling the uninterrupted learning and setting routines for students comprising online-classes, projects, extracurricular activities and exams. There are plethora of open-source digital learning solutions and Learning Management Software for increasing the quality of teaching and learning. Many Ed-Tech companies are continuously upgrading their online platform and software for better performance. Furthermore for designing successful online study sessions some rules must be followed like: maintaining slow voice and practicing vocal functions, sharing resources before the class will help in creating interactive online classes. It is recommended that Higher Education Commission should make collaborations with telecommunication industries for overcoming Internet-related issues for seamless remote learning. Metrics like feedback from students, offer flexible teaching and assessment policies, recorded lectures will contribute in the success of the online teaching pedagogy. Platforms like Zoom, Google Meet, Moodle, Edmodo, etc. have been used for online education and live communication. Although many academic units have also started blended learning, some academic institutions that were earlier reluctant to change their traditional pedagogical approach had no option but to shift entirely too online teaching–learning. This situation challenged the education system across the globe and forced educators to shift to an

online mode of teaching. The lesson learned from the pandemic of 2020 will force a generation of new laws, regulations, platforms and solutions for future cases, when the countries, government and population will be more prepared than today.

Keywords: Pedagogical Content Knowledge, Ed-tech, Remote Learning, Open-Source, Digital Learning, and Online Teaching.

Importance of Information and Communication Technology and Digital Services in Corona Virus Pandemic

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From the beginning of the civilization, innovation has been a key trait of man in taking him towards the advanced future. Especially during the past couple of centuries technological advancement has been the focus human beings. Advancement in ICT has been the major milestone. Since the starting of the pandemic the role of ICT has been acknowledged and advanced further. Technology has played a very central role in providing all the information regarding COVID - 19 to each and every individual on the planet. This, of course comes with a downside of information overflow. The amount of information available today is overwhelming. During COVID-19 ICT has been very helpful in controlling the transmission of the disease. There are many instances to prove it. For example: ICT has helped in fighting misinformation by providing the minute to minute update to the citizens of the world. It's providing correct information about the spread of the disease, availability of basic necessities etc., which was otherwise creating chaos and panic among the masses. ICT is aiding in the tracking and identifying the spread of COVID-19. Thermometer guns, infrared body temperature monitoring system are being used in public places to point out the people at risk of being sick without actually coming in contact with anyone. Businesses have been worst hit by this pandemic but ICT came to the rescue. Work from home is the new normal. Businesses that would have been shut by now are thriving and some are doing even better as they have shifted their work online. People are shopping online more, so instead of investing in infrastructure small entrepreneurs are selling their products online and are investing the money in providing good quality products. People are working from home hence the time wasted in traveling to office is being saved thereby increasing the potential of the employee. Likewise education has also shifted from

physical classrooms to virtual ones. Education did not stop even for a single day during the lockdown. If we focus on the ways in which ICT technology has been used in understanding and coming up with the solutions to COVID-19, we would find sufficient applications to prove our point. For instance technology is being used to create a synthetic DNA so that the DNA of COVID-19 virus can be studied under varied mutations and its effect on the behavior of the virus. This is being done by using the original DNA structure of the virus and altering it with the help of Artificial Intelligence. The use of technology has helped in identifying the weakest point of the virus and now development of the vaccine has become easier than before. It is also aiding in the development of time targeted and area specific treatment to enhance the effectiveness of the cure. The list is long and innovation is still upgrading the technology that we currently have. There are various devices in the market that can keep the tab on the multiple aspects of the user's health. In future these devices will be better equipped to monitor the health more minutely and point out any novelties before it's too late. It is estimated that in coming days we will be able to completely get rid of this pandemic and will be better prepared for the next one.

Keywords: ICT, Covid-19, Synthetic DNA, Pandemic, Lockdown, Small Entrepreneurs, and Infrastructure.

Dynamics of Hospitality Education during COVID-19 Crisis Perspective of Faculty of IHMs

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Information and communication remains the key to people oriented sectors like Hospitality and Education. The unprecedented event of Covid-19 Pandemic crisis has reversed the hemisphere of communication in these fields from physical engagement to virtual frame work. Consequently, the Education in Hospitality has deferred as well leading a chaotic future for the industry. From athithi devo bhava to business and Guru Shishya Parampara to classroom post 1830, virtual framework is the new normal. The Hospitality education by virtue of its components has been extremely surcharged. As a result of which, there has always been a massive lacuna in the demand and supply of quality wise skilled manpower. The attributes like the combination of skill set (interpersonal and non-interpersonal skills), knowledge, competency and attitude demands a very strong engagement of qualified hospitality trainers and

faculties. Also, the new normal has introduced a variation in the syllabus that needs a transformation among the stake holders of the hospitality industry. As per statistics, the organized and unorganized sectors of hospitality industry will take time to revive and reform .With 80% job losses in hospitality sector, the students currently perusing graduations and other vocational courses are threatened with the consequences. A tremendous pressure can be felt on both students and faculties as the gap of skills and lack of jobs under the current situation are alarming. This paper aims at understanding the dynamics of hospitality education in adapting this ecology of survival. The combination of primary and secondary data is used as research methodology. It can be concluded that though a virtual framework has been strategies to keep the prospective service providers engaged during Covid-19 lockdown phase, the essence of hospitality education that remains innovation, recreation and guest satisfaction, demands the physical mode of training from the trainers and faculties.

Keywords: Hospitality Education, Interpersonal Skills, Non Interpersonal Skills, Competency, and Virtual Framework.

Role of ICT in Covid-19 Pandemic

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The objective of this article is Effective uses the Information and Communication Technology (ICT) to the prevention or combat the pandemic rapidly spread of COVID-19 across the world, through ICT device mostly states Government encouragig the people which is cure from the corona pandemic to donate the Blood plasma, its utilized to be cure infected person or to be free from the corona. The *Food Safety* and Standards Authority of *India* (FSSAI) has been given to approval for the test of plasma in which include antibodies content its benefits to come out from the ICU condition. ICT helps to issue important instruction messages related of coronaviruses such as keep distance, avoid the rushed place, use sanitizer and mask, hand wash time to time etc. Rapidly improvement in corona patient cure percentage is near above 91%. Its record easily maintained through ITC. Due to corona virus many employees have been losing their job therefore reduced their income about its effect details to keep properly data records through ICT. And Indian Economy is going at self-dependent India, Government support to small scale and micro industries it is best opportunity to boosting such industry. And help to increase Indian

GDP & comes out from the slack situation. In this situation ICT plays a most important role to do aware of the people about implement social welfare scheme which have in critical situation. And provide very essential things like free of cost ration with financially support by online payments deposited to the beneficiaries' account. The review study revealed ICT interventions that include websites and dashboards, mobile applications, TV utilize for virtual conference, robotics and drones, artificial intelligence (AI), data analytic, wearable and sensor technology, social media and learning device. But also provides a number of implications for the government, practitioners, doctors, policymakers and researchers for the effective utilization of the existing ICT interventions and for the future potential research and technological development to prevent the pandemic spread of COVID-19 and future pandemic.

Keywords: Prevention, Devices, Dashboards, Explored, Effective Utilization, Implications, ICU, Potential Research, and FSSAI.

Role of ICT and Preparedness of E-Content for Online Teaching Learning During Covid-19 Pandemic Outbreak

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Covid-19 pandemic has revolutionised the world threat in a greater extent. In this state, teaching and learning has been hampered in substantial ways all-round the universe. This coronavirus 19 has created a vast challenge in the light of higher education community. Information and Communication Technology (ICT) has proven to be saviour for all sectors especially to the world of teaching. Knowledge about pedagogy and its implication in designing e-content for online teaching has begun the new way of teaching. ICT has shown variety of ways and paths to enhance the teaching learning to a greater extent. Creative distinctive learning environments with acquaintance of digital platform the role of ICT has been endorsed to a greater extent. This article will focus on how to be prepared and more readiness in designing the e-content for online teaching using ICT as prime factor. The virtual need of the teaching has also trended the movement of study in online blended mode with greater extent to self-paced learning in the

society. Covid19 virus has imposed us to move towards online platform where we could adjust our needs with digital literacy.

Keywords: ICT, Covid-19, e-Content, Online Teaching, and Pedagogy.

A Selective Reading on Artificial Intelligence and The Fight Against Covid-19 Pandemic

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Artificial Intelligence (AI) is a highly effective method in fighting the pandemic COVID-19. There has been a fight to have after the disease occurred. It has been shown that the Artificial Intelligence (AI) method predicts exactly which patients newly diagnosed with the COVID-19 virus will continue to develop serious respiratory illness. Artificial intelligence (AI) has been a powerful tool which is the search of COVID-19 treatments. Artificial Intelligence (AI) models and algorithms may save time and money in the search for potential drug leads for emerging diseases.This article provides an early, and necessarily selective review, discussing the contribution of AI to the fight against COVID-19. This paper provides a study of AI approaches used in the fight against the deadly COVID-19 outbreak in various applications, & discusses the key roles of AI technology in this unparalleled campaign. Artificial Intelligence (AI)methods and tools which can be used to solve those problems.AI may be utilized for the preparedness and response activities against the unprecedented national and global crisis.AI based NLP tools which can be used to create systems that help understand the public responses to the intervention strategies. Eg. Lockdown and physical distancing.To detect problems such as mental health and social anxiety, and to aid governments in making better public policies.

Keywords: Covid-19, Artificial Intelligence, Medical, and Social Control.

Challenges and Opportunities in Adopting Recent Advancements in Construction Post Covid-19

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Researchers all over the world are contributing various scientific studies to understand the post effects of COVID-19. While evaluating the impact of this pandemic one field to look upon is cement and concrete construction industry. The construction industry seems to be least important during this pandemic, but one needs to understand how much it affects the environment, and is related to a lot of issues such as economy and GDP; development of a country as well as pollution and global warming. In this paper the authors have raised some burning issues and points which would help not only the civil engineers but also the common people to understand the issues as well as their solutions. Though, some issues and dilemmas were emerged in the analysis and discussions due to less research and no experience of this pandemic in the past. The challenges faced by construction industry post COVID-19, re-planning and restarting of projects, the adverse effects of migration of labours etc. are some points that needs introspection. This paper includes knowledge about strengthening the rules and regulations of construction sector post COVID-19, discussion about deciding the priority of work to restart the construction industry, redesigning the project post pandemic according to the protocols of nature, some points on building resilience and knowledge of adopting new technologies. Also, the other side of this pandemic can be seen by observing the fact that 'the Earth is healing when everything else is on pause'. This is the high-time to understand and plan efficient construction which least disrupts the nature. Some construction methods and technologies that can be adopted to create least pollution and damaging the environment in the least possible ways are moving towards green concrete, zero energy building, rain water harvesting, sustainable building precast and pre-fabricated units, green roof etc. The above mentioned points are discussed in this paper along with the best and easiest solutions and must be adopted as an opportunity in contributing to a better environment. Scientific analysis and better solutions may be thought for future research and focus can be made on some of the points and suggestions made in this paper.

Keywords: Efficient Building Construction, Opportunities in Construction post COVID-19, Restarting Construction Post COVID-19, and Recent advancements.

The Vital Role of Big Data in Covid-19 Pandemic

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As the increase of COVID-19 spread damages many things in the whole world. The very first case of COVID-19 was found in Hubei, China in Dec 2019, and now 214 countries and areas that significantly affect a lot of aspects of our daily lives. As now at this time on October 20, 2020, there are 40,560,835 cases of COVID-19 registered all over the world in which death rates are about 1,121,506 and recovery rate is about 30,279,631. So in this pandemic situation the doctors, researchers, and scientists using sophisticated technologies such as big data analysis for tracking the virus and learning more about it. The big data provides information to identify the suspected cases of COVID-19 virus and analyze global data about detected infected cases, disease modeling, tracking human activity, and visualization of their data. Big data can store a massive amount of data about the infected people of COVID-19 and it helps them to inform the scientists and health worker it takes decisions to fight with the COVID-19.It can also help in revealing insights into the spread and control of this virus. Big data can analyze information and disease about citizens. It can track these people down the postcode level, keeping in mind factors obesity, and these analysis reports inform hospitals and healthcare centers because these types of peoples are at risk of contracting coronavirus. It is difficult to store each record of patients and determine the solution to curb the virus. This is where Big Data is going to be useful to store the data of all types of cases such as "infected, recovered and expired" by COVID-19, and information can be effectively used for case identification, helping and resources allocation for good protection of public health. It is observed that and big data is used gainfully to minimize the risk of spreading the COVID-19. Big data can be helpful tool for analyzing datasets and to identify the patterns that can help in the detection and recovery of COVID-19. In the current scenario, big data can digitally store a large number of coronavirus cases and it can provide possible sources and opportunities for the people and help to handle the stressful situation. It helps to analyze reveal patterns, associations, trends, and differences. Big data research and development of new treatment procedures. In this pandemic, big data helps the public, doctors, other healthcare workers, and researchers to track this virus and detect the infection mechanism of COVID-19. In future, Big data analytical techniques may play crucial role to predict the

COVID-19 affected peoples and can be very helpful to stop the spread of these types of viruses in pandemic situations.

Keywords: Big Data, COVID-19, and Analytical Techniques.

Sentiment Prediction of COVID-19 in India Using Machine Learning Algorithms

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COVID-19 was identified as a corona virus disease in China in December-2019. The government of India has declared the Corona virus outbreak a notified disaster. Corona virus is spreading horribly in India. In this paper, we have focused on the tendency of people's emotions, according to the prevalence of corona virus in India. The lockdown was imposed by the Indian government from the last week of March 2020 to the end of May 2020 to reduce the corona virus in India. In the Unlock period, the corona virus cases have been rapidly increasing in India from the first week of June 2020 to the end of September 2020. Many researchers have developed various sentiment analysis models to analyze people's feelings using text which has been shared on various social network platforms such as Facebook, Twitter, and more. We have focused on user's that used Twitter as a social network platform to share their feeling related to influencing factors caused by corona virus outbreak in the form of text and images during the national lockdown and unlock period. Twitter provides a social network platform for communication of the user's to others. In this paper, we have analyzed the people's mindsets or sentiments during the national lockdown in different sectors such as health, private jobs, etc, through their posts (tweets) on the social network website such as Twitter. Sentiment analysis has been carried out using sentiment classification Technique based on supervised Machine learning. The peoples of India had a positive approach at the beginning of the national lockdown. As the Government extended the lockdown period, the peoples of India have started to express negative approaches such as sadness, depression, etc. In our analysis, we extracted people's sentiments from the collected data during the lockdown and unlock period from Twitter. The analyzed results can

guide Authorities and health specialists to understand people's feelings or sentiments. Authorities are taking preventive and control measures to control the spreading of corona virus as suggested by the medical Research organization so that negative causes can be reduced.

Keywords: Corona Virus, COVID-19, Machine Learning, Social Distancing, Social Websites, Prediction, and Sentiment Classification.

Importance and Impact of ICT in Higher Education

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Information and communication technologies (ICT) have become common important entities in all aspects of life. Last two decades the use of ICT has fundamentally changed the practices and procedures of nearly all forms of endeavour within business and governance. Within education, ICT has begun to have a presence but the impact has not been as extensive as in other fields. Education is a very socially oriented activity and quality education has traditionally been associated with strong teachers having high degrees of personal contact with learners. The use of ICT in education lends itself to more student-centered learning settings and often this creates some tensions for some teachers and students. But with the world moving rapidly into digital media and information, the role of ICT in education is becoming more and more important and this importance will continue to grow and develop in the 21st century. This article highlights the various impacts of ICT on contemporary higher education and explores potential future developments. The article argues the role of ICT in transforming teaching and learning and seeks to explore how this will impact on the way programs will be offered and delivered in the universities and colleges of the future. Below figure represent the impact of different parameters using in ICT. Different parameters are used in the integration of ICT. ICT is a revolution that has changed many aspects of the way we live. Such fields as medicine, tourism, travel, business, law, banking, engineering and architecture, the impact of ICT across the past two or three decades has been enormous. The way these fields operate today is vastly different from the ways they operated in the past. But when one looks at education, there lack of influence and far less change than other fields have experienced. Some people have attempted to explore this lack of activity and influence by Soloway and Prior, 1996; and Collis, 2002.

Keywords: Information and communication technology (ICT), Teaching and Learning.

Importance of Robotics in During Covid-19 Pandemic Outbreak

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We all know that the world is facing the most complex pandemic and social distancing is the only cure at this moment. During this pandemic, Technology today has undoubtedly played a significant role in providing all the required information and has proved to be very useful. Equally, as other technologies, robots are also playing an important role in pandemic to maintain social distancing. Besides serving the patient robotics plays a vital role in keeping doctors and health-care staff safe. According to a study "Robots have the potential to be positioned for disinfection, conveying medications and food, measuring vital signs, etc. As epidemics escalate, the potential roles of robotics are getting increasingly clear." Robotics has begun as an important aid for the health-care industry, protecting front-line workers like doctors, policemen, etc. To keep people indoors, reduce human involvement within the supply chain, and enable the graceful working of business sectors. In this pandemic, our scientists made immense and supportive robots for controlling the spreading of COVID-19 all over the world. Robotics can help humans as-Reminding about the social distance to joggers, in Singapore, Public Utilities Board's social distancing ambassador robot broadcast reminders at joggers to maintain distance during the coronavirus. Safe distancing ambassador, in Singapore, a four-legged dog robot called SPOT who patrols during a park because it undergoes testing to be deployed as a secure distancing ambassador, following the coronavirus disease outbreak. Avoiding human contact, in Shanghai, China, robots serve food to people at a restaurant, obeying a plague of the novel COVID-19. A robot disinfectant sprayer, in Luoyang, Henan province, China, a robotic disinfectant sprayer for terminating the novel coronavirus climbs raise. Serving food in the restaurant in Kochi, robots developed by start-up firm Asimov Robotics, in which robots hold a tray with face masks and sanitizer and initiated to layout awareness about the coronavirus. CRUZR Robot, at University Hospital Antwerp (UZA) a robot called CRUZR, is formed available to hospitals and other locations to manage the temperature and good positioning of the protective mask, in the middle of the coronavirus disease, in Antwerp, Belgium. ANTWERP (Reuters) as a primary line of control in hospitals and shops, in Belgium, robots that talk somewhat 53 languages, detect fever, and determine if people are wearing masks properly are uncoiled. In upcoming years, we can

assume that humans may be got replaced by computers and robots, as computers and robots are able to do work more efficiently with fewer mistakes than humans. In this pandemic, Robotics has attained a lot of importance and as we move ahead the use of them will only increase. The global fight against corona virus disease has seen technology play a peculiarly important role in assisting humans in containing the spread of the virus and handling the prevailing cases. One of the key technologies that have made an enormous difference on the bottom is robotics. A vast number of hospitals across the world are presently using robots to assist both the healthcare staff and patients.

Keywords: Robots, COVID-19, Social Distancing, and Protective Mask.

Assessing the Prospects and Challenges of Information Communication Technology on Nigeria Economic Growth: An Evidence Based Perspectives

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It is now obvious and glaring that the role of Information and Communication Technology (ICT) in engendering Nigeria's economic growth cannot be underestimated which explicitly, it has been able to reduce transaction costs and thereby improve productivity, offer immediate connectivity, increase choice in the market place and provide access to otherwise unavailable goods and services. However, its prospects and success and the storms it emanated over the years still remain an endless contending issues for the country. Just as computer application has triple Nigeria economic growth; it has also Fast-track the growth of criminal activities, particularly internet fraud, cybercrime among others. For instance, in2018 alone, Nigeria government, various corporate entities in Nigeria and individuals collectively lost a total sum of $800 million (N288 billion) to cyber-attacks. It is against this background; this paper intends to assess the constraints and prospects of ICT on Nigeria economic growth using an evidence-based perspective to analyses the narratives. The paper is divided into four sub-related parts, and part one is the introductory session. Part two of the paper conceptualized and contextualized variables such as ICT, cybercrime, among others. Part three of the paper categorically dealt with the prospects and problems of ICT from the context of Nigeria economy while part four is the closing remark and recommendations. Among the recommendations are: That Forensics

commission should be established, which will be responsible for the training of forensics personnel/law enforcement agencies; and that government must take a proactive step to curb the menace with all purpose of sincerity, and that there should be collaborative efforts of governments, corporate entities and the citizenry in checking cybercrimes. The paper is analytical in nature and therefore, qualitative method of data gathering was purely adopted. Data were scavenged from Central Bank of Nigeria (CBN), Economic and Financial Crime Commission (EFCC), Nigeria Bureau of Statistics (NBS), Journals of reputable impact, Books, and the Internet among others. The data were analyses using content analytical method.

Keywords: Information and Communication Technology (ICT), Content Analytical Method, Cybercrimes, and Economic Growth.

Developing Online Modules for Training of Educational Administrators

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Covid-19 pandemic quickly led to the closure of various universities around the World, we hope that everyone should be safe. This proposed system named as the developing online module for educational administrator is based on creating a module that allows the teachers to learn Cutting edge technology-based teaching methods that allows to learn various communication technologies with ease, This proposed system allows the teachers to learn from students about communication methods. As per our own survey, students are more updated with technology. As not every student affords to own a smartphone, we aim to provide education to students who owner feature phone. This whole pandemic situation should not be a problem for education so we offer a program for students as well as teachers to get updated with the technology. As we conclude this year, 2020 should not be remembered as the year everyone was Quarantined, but as the year that brought the world together through technology.

Keywords: COVID-19, Communication Technologies, and Educational Administrators.

Online Education System in Dapoli during Covid -19 Pandemic

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The present study describes the night-time active hearth detection capabilities of Maharastra Govt - satellite info over the forest region of Konkan region, Dapoli Tehsil, Bharat in 2020.Maharastra State had a high incidence of forest fires throughout 2000-2020 as a result of the extended time of year, with the freakish absence of intermittent downfall from solar DMSP-OLS info were processed to search out active night-time forest fires over Maharastra State and valid with ground info and fine-resolution Indian Remote Sensing (IRS)-P6 Advanced Wide Field sensor DMSP-OLS-derived night-time fire merchandise were compared with synchronous Moderate Resolution Imaging derived daytime fire merchandise to establish for the special agreement and continuity of fires. To estimate the burnt areas, completely totally different half correction algorithms were applied to the IRS-P6 AWiFS dataset; these boxed in the cos approximation model (COST), ATCOR2 in ERDAS Imagine and conjointly the Second Simulation of a Satellite Signal at intervals the star Spectrum (6S) code. Half corrections to the satellite info indicated vital improvement in burnt house estimates. The results of the study advocate associate degree honest correlation between AWiFS data-derived burnt areas, DMSP-OLS-derived fire counts and MODIS-derived fire merchandise. The fireside occurrences derived from DMSP-OLS and MODIS info were valid with field records lit occurrences over the study house.

Keywords: ICT, Communication, and Geo.

New Pedagogy for Teaching during Covid-19: Online Teaching

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There has been a significant rise in the challenges faced by the higher education worldwide due to Covid-19 pandemic, amongst which the main challenge is the completion of courses online. The urgent need to shift the teaching pedagogy online has not only increased the stress but the workload of the staff as well as the students. Lack of pedagogical content knowledge (PKC) has been the major challenge faced by the university teachers. PKC includes teaching as well as

administrative aspects of teaching online. Online learning and teaching has its own array of tools, pedagogical approaches and resources. Online teaching and learning is a success only if we do not forget that learning is social: we learn from others and with others. Excellent communication skills, careful design and active involvement of the teacher and learner are some of the key points that make online learning a success. If a course is offered through pre prepared materials, but lacks communication, feedback and dialogues, then it can cause distress among students as well as the teachers. This paper covers various methods and techniques for online teaching. This can be helpful for designing interactive sessions for students who are learning online. We can begin with practicing vocal functions and use of low pitched voice. Along with this the study materials and resources can be shared before the session, as it can result in a more interactive session. Planning and strategies can play a vital role in enhancing online learning. Feedbacks from students, flexible teaching methods and assessment polices are some factors that result in enhancing remote learning. Various random issues can come up during online teaching which includes overloading of server, lack of devices, poor internet connectivity and software installation related issues. Hence institutions must always be ready with Plan B or Plan C so that these random issues can be resolved without causing any delay in learning for the students. Technology allowed us to adapt a different approach towards teaching and learning. Students can learn and apply their knowledge in an innovative way as they have access to digital content, various forms of assessments, learning analytics which guide their choices and progress and interactive sessions with peers and teachers all around the world. Students can take initiative in shaping their own knowledge by taking active participation in online discussions. Although technology has made online teaching and learning innovative but the major role is played by the faculty and the instructors as to how they make the best use of technology which therefore defines their roles as teachers and guides.

Keywords: Pedagogical Content Knowledge (PKC), Online Teaching and Innovative Learning, and Interactive Sessions.

PROGRAMME SCHEDULE

Inaugural Session
Day 1: Thursday (05/11/2020)
Timings: 10:00 am to 11:15 am
Joining Link: http://tiny.cc/RAICT_DAY1_SESSION1

Technical Session: 1 **Track: ICT Role in COVID-19 Pandemic**

Day 1: Thursday (05/11/2020)
Timings: 11:30 am to 02:00 pm

Keynote Address
Invited Talk: Prof. R. Balasubramanian
Department of Computer Science & Engineering,
Indian Institute of Technology Roorkee
Duration: 11:30 am to 12:00 pm
Joining Link: http://tiny.cc/RAICT_DAY1_SESSION1

Paper Presentation **Joining Link:** https://meet.google.com/jds-yfri-ucz

Session Chair (s): Dr. Dhirendra Pandey & Dr. Mohammad Muqeem

Session Manager (s): Mr. Wasim Khan & Ms. Eram Fatima Siddiqui

S. No.	Author(s) Name	Abstract Title	Time Duration
01.	Ashish Kumar, Pradeep Kumar Rai and Virendra Singh	Integrating ICT Systems to Control Spread of COVID-19 in India	12:00 pm to 02:00 pm
02.	Pradeep Kumar Rai, Ashish Kumar and Virendra Singh	Exploring the Potential of E- Learning and other ICT Programs in Midst of Coronavirus Pandemic	
03.	Yogesh Pal, Santosh Kumar, Anshita Raj and Bineet Gupta	Use of Novel DNAFIDs Technique in Target Identification in Epidemic: COVID19 Scenario	
04.	Sumera Jafri and Mohammad Faisal	ICT and Education: A Transforming Reform During COVID-19 Pandemic	
05.	Syed Adnan Afaq and Mohammad Faisal	ICT: As a Corona Warriors for Education	
06.	Faisal Ullah Khan	Enhancing Learning via Acceptance of Technology: A Study Among Students in Lucknow	
07.	Jayant Saini, Abhishek Kumar Gupta and Nashra Javed	Online Teaching Pedagogy During Covid-19 Pandemic Outbreak	
08.	Mohammad Zain, Mohammad Sajid and Farooq Ahmad	Importance of Information and communication technology and digital services in Corona virus Pandemic	
09.	Shraboni Puri	Dynamics of Hospitality Education During Covid -19 Crisis Perspective of Faculty of IHMs	
10.	Jaya Bhimrao Dabarase	Role of ICT in Covid-19 Pandemic	
11.	Prateek Thakral and B. Ganguly	Role of ICT and Preparedness of E-Content for Online Teaching Learning During Covid-19 Pandemic Outbreak	
12.	A V Shukla and S H Abbas	A Selective Reading on Artificial Intelligence and The Fight Against Covid-19 Pandemic	

13.	Adiba Naz, Mohammad Noman	Challenges and Opportunities in Adopting Recent Advancements in Construction Post Covid-19	
14.	Syed Fahad Junaid, Mohd. Suhail and Tabrez Khan	The Vital Role of Big Data in Covid-19 Pandemic	
15.	Sudheer Kumar Singh, Prabhat Verma, Pankaj Kumar	Sentiment Prediction of COVID-19 in India Using Machine Learning Algorithms	
16.	Arshad Ali and Mohd. Faizan Farooqui	Importance and impact of ICT in higher education	
17.	Anam Tanvir, Arshad Israr Khan and Mohammad Faisal	Importance of Robotics in During Covid-19 Pandemic Outbreak	
18.	Al- Mustapha Bello	Assessing The Prospects and Challenges of Information Communication Technology on Nigeria Economic Gorwth: An Evidence Based Perspectives	
19.	B R. Gujar, P R Kolhe, H N Bhange, B L Ayare, N B Mirajkar and S V Pathak	Developing online modules for training of educational administrators	
20.	B R. Gujar, P R Kolhe, H N Bhange, B L Ayare, N B Mirajkar and S V Pathak	Online Education System in Dapoli During Covid -19 Pandemic	
21.	Areeba Khan	New Pedagogy For Teaching During Covid-19: Online Teaching	

Technical Session: 2 **Track: Distributed and Collaborative Software Engineering**

Day 1: Thursday (05/11/2020)
Timings: 02:00 pm to 04:30 pm

Keynote Address
Invited Talk: Dr. Vishal Krishna Singh
Indian Institute of Information Technology, Lucknow
Duration: 02:00 pm to 02:30 pm
Joining Link: http://tiny.cc/RAICT_DAY1_SESSION2

Paper Presentation **Joining Link:** https://meet.google.com/ycs-pogi-pfe

Session Chair(s): Dr. Alka Agrawal & Mr. Mohammad Kalamuddin Ahmad

Session Manager (s): Mr. Syed Mohd. Faisal & GausiyaYasmeen

S. No.	Author(s) Name	Abstract Title	Time Duration
01.	Gayatri Tiwari	A Review on Optical Burst Switching	02:30 pm to 04:30 pm
02.	Yusra Khalil and Nashra Javed	Road-Map To Full Stack Web Development	
03.	Kavita Sahu and R. K. Srivastava	Estimating and Predicting Software Reliability through a Novel Approach of Deep Learning	
04.	Savarni Prakash Srivastava, Syed Anas Ansar and Mohd. Waris Khan	A Survey on Potential Problems in Software Security	
05.	Jaya Yadav and Syed Anas Ansar	Exploring Potential Problems with Information Security Risk Management	
06.	Sandeep Kumar Sharma and Mazhar Khaliq	Software Quality Forensics and Standards: An Ontological Approach	

07.	Kashif Asad and Mohd. Muqeem	An analysis of Development of Product with the Scrum Framework	
08.	Mohammed Siddique and Tasneem Ahmed	Evaluating Web Services Frameworks for the Development of Enterprise Web Service Computing Systems	
09.	Santosh Kumar and Sandeep Kumar Nayak	Advancement of Privacy Issues in Crowdsourcing	
10.	Anmol Kapil and Gayatri Kapil	Next Step in Passwords: Alternatives to Plain Text Passwords	
11.	Vandana Pandey, Sandeep Kumar Nayak and Mohd. Faisal	An Overview of Security Testing: A Design Perspective	
12.	Ashish Kumar Pandey, Shashi Kant Gupta	Green Technology: A Review	
13.	Shashi Kant Gupta, Ashish Kumar Pandey	Reliability Exploration of DCELL Interconnection Structure Network	
14.	Sumera Jafri and Mohammad Faisal	Re-Conceptualizing Software Engineering Process during COVID-19	
15.	Tabrez Khan and Mohammad Faisal	Risk Classification and Analysis in Software Development	
16.	Malik Shahzad Ahmed Iqbal and Mohammad Ishrat	Distributed Energy Resources Allocation in Distribution System Using EERP	
17.	Eram Yashmin, Afiya Kkhatoon and Muhammad Kalamuddin Ahamad	3D Internet Utilities and Applications: A Survey	
18.	Anirudh Banerjee	Testing Two Random Multilayer Structures for Optical Filtering Performances	

Technical Session: 3	**Track: Cyber Security, Information Security and Forensic Science**		
Day 2: Friday (06/11/2020) **Timings: 11:00 am to 01:30 pm**			
Keynote Address **Invited Talk: Dr. Abhishek Vaish** Indian Institute of Information Technology, Allahabad **Duration:** 11:00 am to 11:30 am **Joining Link:** http://tiny.cc/RAICT_DAY2_SESSION1			
Paper Presentation		**Joining Link:** https://meet.google.com/zuq-qsvy-nrt	
Session Chair(s): Dr. Imran Ullah Khan & Dr. Mohd. Faizan Farooqui			
Session Manager (s): Dr. Mohd. Waris Khan & Mr. Mohd. Haleem			
S. No.	**Author(s) Name**	**Abstract Title**	**Time Duration**
01.	Adil Hussain She and Rajeev Kumar	Electronic Health Records: Security Issues and Challenges	11:30 am to 02:00 am
02.	Masood Ahmad and Md Tarique Jamal Ansari	Security Study on IoMT in the Healthcare	

03.	Kriti Jaiswal and Mohammad Ishrat	Cyber-Security Challenges and it's Need in Smart Security	
04.	Naseem Ahmad Khan, Satish Kumar and Syed Anas Ansar	A Survey on Cyber Security for Smart Grid Communications	
05.	Syed Adnan Afaq and Mohammad Faisal	Covid-19: As an opportunity for Cybercriminals	
06.	Saquib Ali and Naseem Ahmad Khan	A Survey on Concepts, Applications, and Challenges in Cyber-Physical Systems	
07.	Abida Khanam	Role of Data Science In Cyber Security: An Overview From Machine Learning Perspective	
08.	Vaibhav Vats, Prateek Kumar Garg and Robin Garg	Application of Security Model in Wireless Sensor Networks	
09.	Priya Sinha, Ankita Singh and Mohd Waris Khan	Identification and Mitigation Strategies of Malware Attacks	
10.	Mohammad Ishrat and Mohd Waris Khan	Current Issues and Challenges of Digital Memory Forensics: Security Perspective	
11.	Saud Ahmad Khan, Alina Zubairy and Mohd Waris Khan	The Role of Cyber Security in Digital Life	
12.	Preeti Dixit	Cyber Security, Threats, Related Crime and Awareness	
13.	Mohd Faizan and Manish Joshi	Identifying Key Tor Hidden Services using Hyperlink Analysis	
14.	Farooq Ahmad and Mohammad Faisal	Cyber Security Threats during COVID-19 Pandemic	
15.	Lubna Fatima, Nafees Akhter Farooqui	A Study of Crimes and Forensics Science	
16.	Wasim Khan, Mohammad Haroon	Anomaly Detection in Social Networks using Deep Learning Embedding Approach	
17.	Vineet Kumar Tiwari, Mohd Khalid Raza and Wasim Khan	Anomaly Detection Techniques in Online Social Networks: A Critical Review	
18.	Syed Mohd Faisal	Cyber Attack in COVID 19 Era	
19.	Rajnish Kumar and Mohd Waris Khan	Issues and Challenges in Security Testing of Web Based Applications	
20.	Mohammad Hisamuddin and Mohammad Faisal	Cyber Forensics – Physical Systems: Upcoming Aspect	
21.	Md Fahad, Mubashir Khan and Sudheer Kumar Singh	A brief Survey of Challenges and Applications of Social Computing	
22.	Nurul Huda, Nitanshu Tripathi and Anwar Bari	Cyber Crime: Challenges in Detection and Prevention	
23.	Gulafshan Parveen and Sudheer Kumar Singh	A Brief survey of Application domain in Social Computing	

Technical Session: 4 **Track: Data Science, Machine Learning, Internet of Things (IoT) and Cloud Computing**

Day 2: Friday (06/11/2020)
Timings: 02:00 pm to 04:30 pm

Keynote Address
Invited Talk: Dr. Saurabh Shukla
Data Science Institute
National University of Ireland (NUIG)
Duration:02:00 pm to 02:30 pm
Joining Link: http://tiny.cc/RAICT_DAY2_SESSION2

Paper Presentation **Joining Link:** https://meet.google.com/guk-hmht-ujt

Session Chair: Dr. Mohammad Haroon

Session Manager (s): Mr. Anwar Bari & Mr. Malik Shahzad Ahmad Iqbal

S. No.	Author(s) Name	Abstract Title	Time Duration
01.	Mohd. Nadeem and Abhishek Kumar Pandey	Quantitative Analysis of Security Issues of Big Data: Healthcare Industry	02:30 pm to 04:30 pm
02.	Shubhangi Mishra, Samreen Nadeem, Nashra Javed	Covid-19 Pandemic Accelerates Machine Learning For a Safe Future	
03.	Gausiya Yasmeen	Succor in Health Industry: IoMT	
04.	Afroj Alam	Cloud and IoT based disease risk prediction using Improved K-means clustering over Big Data in Smart Healthcare system	
05.	Richa Verma and Shalini Chandra	Importance of Trust: Fog Computing Perspective	
06.	Jasleen Kaur, Alka Agrawal and Raees Ahmad Khan	Privacy in Fog-IoT Paradigm: Types, Issues and Dependant Factors	
07.	Sandhya Satyarthi and Dhirendra Pandey	IoT Risk Assessment: Risk Identification and Elimination For Security of IoT devices	
08.	Aafia Irfan Beg, Amina Khan and Mohammad Faisal	Data Science Conquering Challenges Endured Amidst Covid-19	
09.	Vipin Khattri and Sandeep Kumar Nayak	Role of Balanced Dataset In Classification Task of Machine Learning	
10.	Sara Khan	Taking Artificial Intelligence To The Next Level: Applying Quantum Computing Techniques in Artificial Intelligence	
11.	Khushnuma and Tasneem Ahmed	A Review of IoT Based Smart Cities in India	
12.	Priyanka Yadav, Awantika Sinha and Farooq Ahmad	Big Data Application in Healthcare	
13.	Eram Fatima Siddiqui and Sandeep Kumar Nayak	Virtualization as A Pertinent Prerequisite for Cloud Computing	
		The Necessity of Creating A Unified Framework As A General IoT Platform	
14.	Wamique Zia and Tasneem Ahmed	A Critical Study of IoT based Earthquake Detection Systems	

15.	Syed Osama Ashraf, Raj Pawan Shukla and Mohd Haleem	Imputation of Missing Data in Machine Learning	
16.	Khalid Jamal	A Method for Predicting Academic Performance of Students by Using Modified Particle Swarm Optimization (PSO)	
17.	Aftab Alam Abdussami	Incremental Learning based Intrusion Detection and Prevention Model for Fog Environment	
18.	Tanveer Ahmad, Rajiv Pandey, Suhel Ahmad Khan	Applying Leaver concept to secure Cloud Services in Multi-Tenancy Lower Environment	
19.	Mohd Haleem, Md. Faizan Farooqui and Mohammad Faisal	A Fuzzy Quantification Approach for Uncertainty Estimation in Natural Language Text	
20.	Tabish Izhar, Syed Aqeel Ahmad, Tasneem Ahmed	Potential Application of Artificial Intelligence and Internet of Things in Civil Engineering	
21.	Farooq Ahmad and Mohammad Faisal	Challenges in Integrating Cloud with IoT	
22.	Faraz Arif, Saifur Rahman, Faizan A Khan	Industrial Application of IoT-Technology in the Automobile Sector	
23.	Nafees Akhter Farooqui and Fazla Laiq Khan	The Role of Advanced Machine Learning Technique in Environment, Biodiversity and Disaster Management	
24.	Mohd Aquib Aijaz, Mohd Daud Ali and Halima Sadia	A Model for predicting Diabetes Mellitus at an Early Stage	
25.	Mirza Ghazanfar Baig and Sandeep Kumar Nayak	Weapon Autonomy: Greedy Algorithm Selecting & Attacking Perspective	
26.	Shivani Shukla, Taniya Afreen and Malik Shahzad Ahmed Iqbal	Potential Application of Big Data And Machine Learning To Preempt Cyber Attacks	
27.	Sheenu Rizvi	A Comparative Study of Cloud Computing Models	
28.	Mazhar Khan, Vishal Mishra, Mohd Muqeem	A Review on Blue Eyes Technology	
29.	Mohammad Mobashshir and Sandeep Kumar Nayak	Data Science and Machine Learning in E-Commerce	
30.	B R. Gujar, P R Kolhe, H N Bhange, B L Ayare, M H Tharkar and S V Pathak	Agricultural big data processing and storage	
31.	B R. Gujar, P R Kolhe, H N Bhange, B L Ayare, N B Mirajkar and S V Pathak	Cloud Computing in Geospatial Applications	
32.	Hafiz Ahamad, Abdul Malik Siddiqui and Sudheer Kumar Singh3	Artificial Neural Network: An Industrial Application	
33.	Mohd. Junaid Ansari, Mohd Zafar and Sandeep Kumar Nayak	IoT Based Air Pollution Monitoring System	
34.	Neeraj Kumar Singh, Sahil Raza and Syed Mohd. Faisal	Neural Interface: A Bridge Between Human And Machine	

35.	Vishnu D. Jadhav, Vishal. V. Sangare, Prakash R. Kolhe, Bravish R. Gujar and Ganesh Kadam	Use of Information Technology (IT) in Education Services with Cloud Database	
36.	Muhammad Kalamuddin Ahamad and Ajay Kumar Bharti	Safety Assessment of Health Care Covid-19 in India: Assisted the Fuzzy Logic Approach (FIS)	

Technical Session: 5 **Track: Computer Vision and Image Processing & Blockchain Technology**

Day 3: Saturday (07/11/2020)
Timings: 09:30 pm to 12:30 pm

Keynote Address
Invited Talk -1: Dr. Alam Nawaz
Yeungnam University, Republic of South Korea
Duration: 09:30 am to 10:00 am
Joining Link: http://tiny.cc/RAICT_DAY3_SESSION1

Invited Talk -2: Dr. Haider Raza
University of Essex, United Kingdom
Duration: 10:00 am to 10:30 am
Joining Link: http://tiny.cc/RAICT_DAY3_SESSION1

Paper Presentation **Joining Link:** https://meet.google.com/tpg-ppbh-owd

Session Chair: Mrs. Halima Sadia

Session Manager (s): Mr. Syed Mohd. Faisal & Dr. Mohammad Ishrat

S.No.	Author(s) Name	Abstract Title	Time Duration
01.	Aftab Ahmad Mir, Abid Sarwar and Manoj Kumar	In The Era of Deep Learning: Medical Image Processing	10:30 am to 11:30 am
02.	Homika Arora, Naved Alam, Junaid Khokher, Omair Ahmad, Ayan Akhtar	Geofencing Attendance system Model using GPS	
03.	Shobhit Sinha	Argumentation Mining: Classification and Detection of Arguments in Texts	
04	Rajat Sharma and Bineet Kumar Gupta	Magneto Anti-Carcinogenic Therapy: Identification and Cure of Cancer Cells Using Emulated Sequentially Programmed Magnetic Field (eSPMF) therapy	
05.	Mohammed Siddique and Tasneem Ahmed	Role of Satellite Images in Estimation of Locust Swarm Infested Areas during COVID-19 Pandemic in India	
06.	Mohammad Abbas, Abdul Rahim and Mohammad Ishrat	The New Age of Face Recognition and Their Concerns	
07.	Saurabh Srivastava and Tasneem Ahmed	Similarity-Based Neural Network Model for Feature-Based Satellite Image Retrieval System	
		Satellite Image Quality Assessment in Big Data Repository Using Big Data Analytical Techniques	
08.	Masarrat Nasir, Mantasha Abu Bakar and Tasneem Ahmed	Impact of Rapid Urbanization on Land Surface Temperature Rise by Using Satellite Image	
09.	Mohd Amaan, Azkar Ahmad and Mohammad Faisal	Drone Based Surveillance for Public Safety	

10.	B R. Gujar, P R Kolhe, H N Bhange, B L Ayare, N B Mirajkar and S V Pathak	Agricultural decision support systems Processing and application of high-resolution imagery	
11.	V. D. Jadhav, P. R. Kolhe, V. V. Sangare, A. R. Patil, and M. H. Tharkar	Role of Information Technology in Plant Diseases Detection and Management	
12.	Atika Fatma and Shivam Tiwari	An Accurate Study of the Quality of Health Coinciding with the Process of Handwriting	
13.	Eram Fatima Siddiqui and Sandeep Kumar Nayak	Advancing Towards Secure Digital Economy: An Introduction to BlockChain Technology	
12.	Mahvish Nazar, Asjad Raza and Mohd Haleem	Applications of Blockchain in Digital Life: A Systematic Review	
11.	Halima Sadia and Mohammad Faisal	Transforming the Face of Digital Health: Blockchain being the ultimate solution	
12.	Jyoti Yadav and Ranjana Shevkar	Performance Based Analysis of Blockchain Scalability Metrics	

Invited Talk -3: Prof. Dharmendra Singh
Department of Electronics & Communication Technology,
Indian Institute of Technology, Roorkee
Duration: 11:30 am to 12:00 pm
Joining Link: http://tiny.cc/RAICT_DAY3_SESSION2

Valedictory Session

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SPEAKERS

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West Texas A&M University,
United States of America

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Indian Institute of Technology (IIT), Roorkee

Dr. Saurabh Shukla
Data Science Institute (DSI)
National University of Ireland,
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Indian Institute of Information Technology (IIIT) Lucknow

Dr. Alam Nawaz
Yeungnam University
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