

# i-Aabhyantar

*Newsletter of the Department of CSE & IT, JIIT, Noida*

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Volume 1 Issue 2



Department of Computer Science & Engineering and Information Technology

Jaypee Institute of Information Technology, Noida

(Deemed to be University under Section 3 of UGC Act 1956)

EDITORS : Prof. Charu ● Dr. Mukesh Saraswat ● Dr. Himani Bansal ● Dr. Pulkit Mehndiratta ● Dr. Vikash



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### *Pro-Chancellor's Message*



I am happy to know that the Department of CSE & IT is publishing its second issue of the newsletter “i-Aabhyantar”. I believe that “i-Aabhyantar” will showcase the activities of the Department namely in the areas of teaching, research, placements, conferences, workshops, training programs, expert lectures and collaborations. In present time, computer science and IT is one of the fastest growing technology field. Modern society infrastructures and functions are mostly based upon IT. It is playing an important role in our daily live. At JIIT we aim to motivate and nurture our students to excel in multifaceted computing and IT technologies. I would like to congratulate the editorial team for bringing out this issue.

**Prof. S.C.Saxena, Pro-Chancellor, JIIT, Noida**

### *Vice-Chancellor's Message*



I am happy to know that the Department of Computer Science & Engineering and Information Technology (CSE&IT) of Jaypee Institute of Information Technology (JIIT) Noida is bringing out their second issue of the Newsletter “i-Aabhyantar”. The department strives to create an environment encouraging students to learn more and provide an auxiliary system to support extra-curricular participation. The Newsletter is a testimony to all the quality teaching and research happening in the Department. I look forward to reading about the various activities and achievements in the Newsletter.

**Prof. Y.R. Sood, Vice Chancellor, JIIT, Noida**

### *Head of the Department's Message*



I am delighted and excited to present you the second issue of ‘i-Aabhyantar’, the quarterly newsletter of CSE&IT Department, at Jaypee Institute of Information Technology (JIIT), Noida. It’s a matter of pride and satisfaction that the department, with 100 faculty members and 130 Ph.D. scholars, is successful in achieving the prime goal of a University in to create and disseminate the knowledge. This newsletter is a small step to display various activities, academic achievements & success stories of our students and faculty. I strongly believe that ‘i-Aabhyantar’, will provide another platform for our students and stakeholders to get enlightened and participate in the growth of the department. I am very thankful to Prof. Charu and editorial team members, Dr. Mukesh Saraswat, Dr. Himani Bansal, Dr. Pulkit and Dr. Vikash who worked very hard to generate this news letter.

**Prof. Vikas Saxena, Head (CSE&IT), JIIT, Noida**

Department of Computer Science & Engineering and Information Technology (CSE & IT) is pleased to proclaim the second issue of the departmental newsletter **“i-Aabhyantar”**. In this version, we are reporting departmental insights from July-2021 to September-2021.

With the whole world, we are also recovering from COVID-19 situation. Although, the pandemic affects the delicate relationship between people and countries of different zones. Under the supervision of Founder Chairman, Shri Jaiprakash Gaur, Hon'ble Chancellor, Shri Manoj Gaur followed by Hon'ble Pro-Chancellor, S. C. Saxena, and Hon'ble Vice-Chancellor, Prof. Y. S. Sood, CSE & IT department has come with new innovation and ideas to achieve the vision and mission.

In the new age of digitization, computer engineered Information became the prime step towards the realization of a sustainable society, which provides ease of life standard with economical and technological growth. Our department plays an important role to add a new dimension with the help of new innovation. The **“i-Aabhyantar”** is the official voice to announce the departmental statements and statistics to the world. Moreover, **“I-Aabhyantar”** provides a common platform to publish all the advancements and activities in the current semester.

Department of CSE & IT put his continuous effort to come with new advancements and achievements for the exponential growth of our department. The **“i-Aabhyantar”** committed to publishing all the necessary information along with the details of future plans.

We are recovering from COVID 19 situation. Still don't forget to take all the precautionary measures of COVID 19.

**DIGITIZATION FACILITATES ONE OF THE BEST SUITED OPTIONS TO COVID 19**



**With regards  
Editors**

## *Vision and Mission of Institute*

### **Vision**

To become a Centre of Excellence in the field of IT & related emerging areas education, training and research comparable to the best in the world for producing professionals who shall be leaders in innovation, entrepreneurship, creativity and management.

### **Mission**

1. To develop as a benchmark University in emerging technologies.
2. To provide state-of-the-art teaching learning process and R&D environment.
3. To harness human capital for sustainable competitive edge and social relevance.

## *Vision and Mission of CSE&IT Department*

### **Vision**

To be a Centre of Excellence for providing quality education and carrying out cutting edge research to develop future leaders in all aspects of computing, IT and entrepreneurship.

### **Mission**

1. To offer academic programme with state-of-the-art curriculum having flexibility for accommodating the latest developments in areas of computer science and IT.
2. To conduct research and development activities in contemporary and emerging areas of Computer Science & Engineering and IT.
3. To inculcate IT & entrepreneurial skills to produce professionals capable of providing socially relevant and sustainable solutions.



## ***PROGRAMME EDUCATIONAL OBJECTIVES (PEOS) OF B.TECH. (CSE)***

**PEO 1:** To provide core theoretical and practical knowledge in the domain of Computer Science & Engineering for leading successful career in industries, pursuing higher studies or entrepreneurial endeavours.

**PEO 2:** To develop the ability to critically think, analyze and make decisions for offering techno-commercially feasible and socially acceptable solutions to real life problems in the areas of computing.

**PEO 3:** To imbibe lifelong learning, professional and ethical attitude for embracing global challenges and make positive impact on environment and society.

## ***PROGRAMME EDUCATIONAL OBJECTIVES (PEOS) OF B.TECH. (IT)***

**PEO 1:** To impart core theoretical and practical knowledge of Computer Science & Engineering and emerging Information Technologies for leading successful career in industries, pursuing higher studies or entrepreneurial endeavours.

**PEO 2:** To develop the ability to critically think, analyze, design and develop IT based solutions.

**PEO 3:** To imbibe the life-long learning and understanding of ethical values, their duties toward environmental issues and sensitize them toward their social responsibility as IT professional.



## *Recognitions*

The CSE & IT Department is devoted to continuous development. With this motive, our faculties and students continuously take participate in the various conference, innovative challenges. Some of the major achievements are mentioned below.

- Dr. Adwitiya Sinha received best paper award in 2<sup>nd</sup> International Conference on Networks and Cryptography (NetCrypt).
- Dr. Adwitiya Sinha received young scientist award in 2<sup>nd</sup> International Conference on Networks and Cryptography (NetCrypt).
- Mr. Barun Acharya student of B. Tech 2<sup>nd</sup> year awarded best project on Geographic Factures Refinement conducted by Google Summer of Code.
- Mr. Asyush sahu of B. Tech 2<sup>nd</sup> year awarded best project on AsyncDiff conducted by Google Summer of Code.
- Mr. Aaryan porwal of B. Tech 2<sup>nd</sup> year awarded best project on Visual Regression Testing of Ceph-Dashboard conducted by Google Summer of Code.
- Mr. Eshan Tripathi of B. Tech 3<sup>rd</sup> year awarded the best project on Website Update conducted by Google Summer of Code.
- Mr. Arshpreet Singh of B. Tech secured 1<sup>st</sup> position in Graphic Designing conducted by Indira Gandhi Technical University for Women.
- Mr. Arshpreet Singh of B. Tech secured 1<sup>st</sup> position in Data Hackathon conducted by Indira Gandhi Technical University for Women.

## *Events*

Department of CSE & IT organizes various Conferences, Workshops, Faculty Development Programs, Seminars, Expert Talks, and Student Enrichment Programs. A large number of participations from academia and industries from all over the glob has been observed in these state-of-the-art events. Every year since 2008, the department organizes an annual International Conference on Contemporary Computing (IC3) with an objective of providing a forum to scientists and researchers, to discuss and put forward their ideas and research findings with the co-researchers from all over the world. This Conference is jointly organized by the Jaypee Institute of Information Technology, Noida, India and the University of Florida, Gainesville, USA. Moreover, Department of CSE & IT is going to organized one more International Conference on Informatics (ICI), which aims a leading international forum for researchers, scientists, and industry professionals who are working on next generation informatics. Despite the COVID-19 pandemic for last more than one year, the CSE&IT Department has organized a number of online events for the enrichment of faculty and students. The details of such events, held online during Odd 2021 Semester, are mentioned below.

- Faculty Development Program on “Innovations and Trends in Software Engineering” has been organized by Dr. Indu Chawala from June 07-12 2021.
- Faculty Development Program on “Deep Learning for Natural Language Processing” has been organized by Dr. Krishna Asawa from June 28 2021 to July 03 2021.
- 13<sup>th</sup> International Conference on Contemporary Computing (IC3-2021) from August 05-07 2021.
- 2-week Summer School on Industry 4.0: Security and Technological Aspects (SSIST’2021) from August 09-21 2021
- Faculty Development Program on “Machine Learning for Internet of Things, Natural Language Processing and Computer Vision” has been organized from August 16-21 2021.

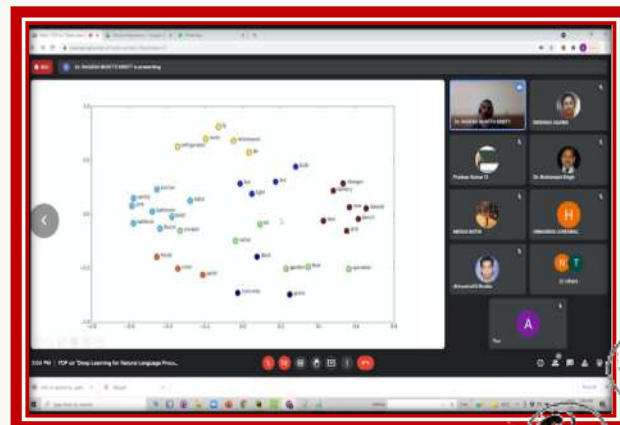


## ***FDP on Deep Learning for Natural Language Processing***

The field of Natural Language Processing (NLP) is one of the most important application areas of the Artificial Intelligence. NLP is undergoing rapid evolution as new methods and toolsets converge with an ever expanding availability of data. This FDP comprised of both theoretical and hands-on sessions which provided the participants with a comprehension of the state-of-the-art natural language processing methods. The FDP helped the participants to develop NLP based products and pursue research in the field of the NLP.

### **RESOURCE PERSONS**

- Dr. Asif Ekbal, IIT Patna
- Dr. P. Balamurugan, IIT Bombay
- Dr. Dipankar Das, Jadavpur University
- Dr. Deepak Saini, Coforge, India
- Dr. Girish Nath Jha, Jawaharlal Nehru University
- Dr. Nagesh Bhattu Sristy, NIT Andra Pradesh
- Dr. Partha Pakray, NIT Silchar
- Dr. Sandipan Dandapat, Microsoft Research Lab, Bangalore, India
- Dr. K. Vimal Kumar, IIIT Noida
- Dr. Arti Jain, IIIT Noida
- Dr. B. Suresh, IIIT Noida







## ***13<sup>th</sup> International Conference on Contemporary Computing (IC3-2021)***

In the conference technical program, there are 65 papers out of 184 papers submitted from all over the world. IC3 2021 promised to be both stimulating and informative with a wonderful array of 6 keynotes from all over the world along with 14 technical sessions. Delegates had a wide range of sessions to choose from and had a tough time in deciding which sessions to attend. The 6 keynotes, conducted during IC3-2021, are as follows:

- **Keynote-1:** Prof. Bharat K. Bhargava, Purdue University, Indiana, USA.

**Title:** Situation Knowledge on Demand (SKOD)

- **Keynote-2:** Prof. Somesh Jha, University of Wisconsin, Madison, WI, USA.

**Title:** Trustworthy Machine Learning: Past, Present, and Future

- **Keynote-3:** Prof. Jim Kurose, University of Massachusetts Amherst.

**Title:** From artifacts to systems to people: evolving directions in computing research and education

- **Keynote-4:** Prof. Antonio Corradi, University of Bologna, Italy.

**Title:** Cloud, Fog, Edge Computing for Industrial Internet of Things

- **Keynote-5:** Prof. Mayank Vatsa, IIT Jodhpur, India.

**Title:** Robust, Fair, and Privacy Preserving Deep Learning

- **Keynote-6:** Prof. Durga Toshniwal, IIT Roorkee, India.

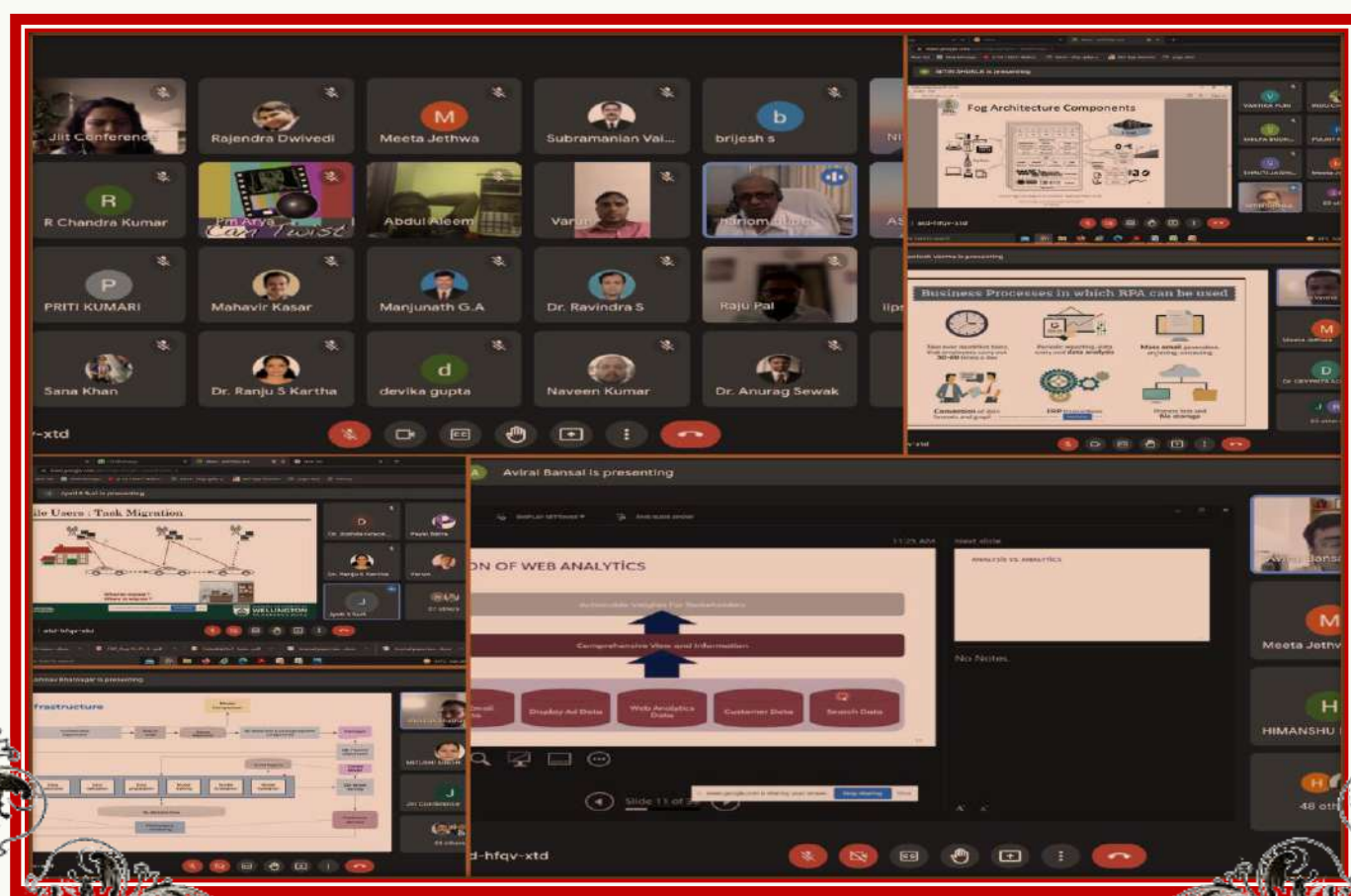
**Title:** Recent Machine Learning Applications - Analyzing Civic Complaints for Proactive Maintenance in Smart City





## ***2-week Summer School on Industry 4.0: Security and Technological Aspects (SSIST'2021)***

Department of Computer Science & Engineering and Information Technology is pleased to organize a 2-week summer school on Industry 4.0 during August 09-21, 2021 under the leadership of Prof. Charu Gandhi along with Dr. Shruti Jaiswal and Ms. Varsha Garg. This summer school helped the candidates to explore the basic structure of Industry 4.0 along with various components involved in the development of a complete ecosystem. Moreover, there are several indirect components, involved in the development of Industry 4.0. This summer school helped the candidates to explore each aspect like blockchain for security, data science for automation, and the role of 5G communication, etc. in the development of the whole ecosystem. The summer school invited several distinguished national and international speakers, who belong to industry and prestigious institutes. Overall, this summer school was very beneficial for the researcher belonging to different research domains like Machine learning, Internet of Things, Computer Vision, etc.

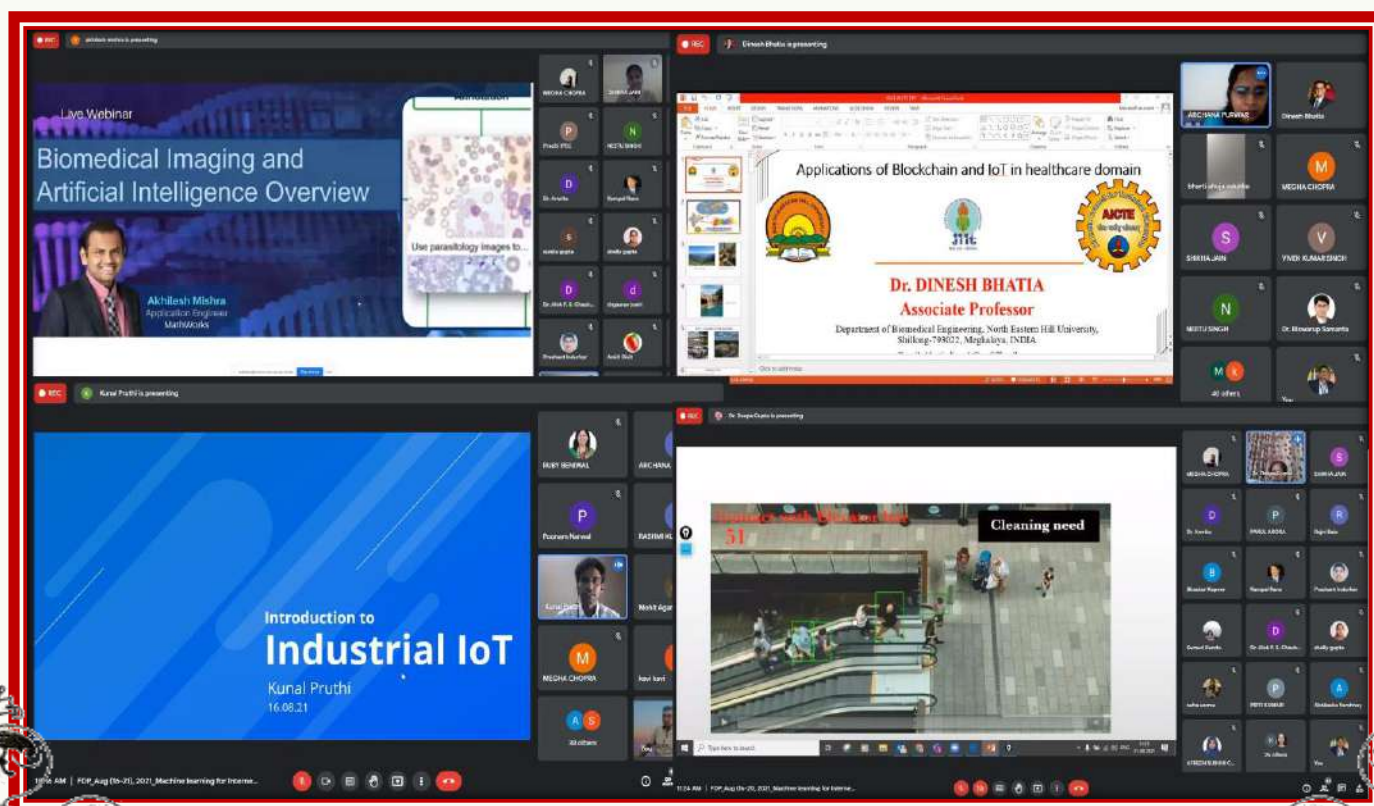




## ***FDP on Machine Learning for Internet of Things, Natural Language Processing and Computer Vision***

Department of Computer Science Engineering Engineering and Information Technology, Jaypee Institute of Information Technology, Noida, exploring the machine learning approach for different area of interest. In this direction, Dr. Archana Purwar and team has successfully organized six-day Faculty Development Program on Machine Learning for Internet of Things, Natural Language Processing and Computer Vision during August 16-21, 2021 in Online mode. The FDP explores different dimensions relater for Internet of Things, Natural Language Processing and Computer Vision. Moreover, FDP help the audience to explore the applicability of Machine Learning in each of the research field along with the basic knowledge of each and every area.

Apart from it, resource person explores on human values & ethics / patent information, which is an important aspect in research domains. Moreover, this FDP also explored the soft computing paradigm in various domains.



## *Guest Lectures by Faculty Members*

Invited Speech, “Named Entity Recognition for Hindi Language Using Health Corpora”, 2021 Workshop on Computer Methods in Medicine & Health Care, Transdisciplinary Information Sciences Conference Series (TDI), September 26, 2021

Expert Lecture on “Fundamentals of Deep Learning”, National Workshop on Deep Learning, Rabindranath Tagore University, Bhopal, Madhya Pradesh, India, September 25, 2021

Keynote Speaker, “Telemedicine- Present and Future Aspects of Big Data Analytics”, 2<sup>nd</sup> International Webinar on Big Data Analytics and Data Science, Coalesce Research Group, USA, September 6, 2021

Expert Lecture on “Road Map of Deep Learning in NER Task”, FDP on Deep Learning for Natural Language Processing, IIIT Noida, India, July 03, 2021



**Dr. Arti Jain**



**Dr. Shikha Mehta**

Expert Lecture: Delivered an expert talk in the webinar on "Deep Learning Architectures for Industrial applications" , on Feb 10, 2022, organized by Dept. of Computer Sceinec, Deen Dayal Upadhyaya College, University of Delhi, Delhi

Delivered a talk on Python Programming over a period of 03 days with participants of the Online Staff Development Programme (SDP) on Technical and Communication Skill Development , organized by the Department of Computer Science and Engineering of Jaypee Institute of Information Technology, Noida from 26th July to 30th July 2021

Delivered a talk on "Bag-of-words for classification" on 01st February, 2022 in One Week (Online) Interdisciplinary Faculty Development Programme on “Applications of AI-Machine Learning and Soft Computing Techniques” during 29th January–3rd February, 2022 organized in collaboration with Kalindi College, University of Delhi



**Dr. Raju Pal**

## *Patents Information*

- ❖ D S Rajpoot et.al. “Machine Learning method for optimization of power management in renewable and non-renewable energy resources” patent .
- ❖ Anuja Arora et.al. “Artificial Intelligent and IoT based Aquaponics System for Self- Sustainable farming” Patent application number: 201911049977
- ❖ Himani Bansal et.al. “Hand Gesture Explication and Lingual Extraction Nascent (HELEN)” Patent application number: 201911047520
- ❖ Shikha Jain et.al. “Safe and Intelligent Scissor” Patent application number: 202011031904
- ❖ Hema N et.al. “Smart Trash Segregation With Coordination For Waste Disposal Using Solar Energy” Patent application number: 202011046432 (Filled)
- ❖ Vikas Saxena et.al. “A Method To Set A Threshold Value For A Flex Sensor” Patent application number: 202111027482
- ❖ Shikha Jain et.al. “EMOIT: An Intelligent Toy With Emotions” Patent application number: 202111051272

# *List of publications*

*July 2021 – December 2021*

## *International Journals*

- ❖ Manju A Meta-Heuristic Based Approach with Modified Mutation Operation For Heterogeneous Networks. *Wireless Pers Commun* (2021).
- ❖ Manju, Malik, A. et al. A threshold-based energy efficient military surveillance system using heterogeneous wireless sensor networks. *Soft Comput* (2021).
- ❖ Chahal, E.S., Patel, A., Gupta, A. and Purwar, A. Unet based Xception Model for Prostate Cancer Segmentation from MRI Images. *Multimedia Tools and Applications*, pp.1-17.
- ❖ V.Puri, P. Kaur, S.Sachdeva. ADT: Anonymization of Diverse Transactional Data", *International Journal of Information Security and Privacy* (2021).
- ❖ Mishra, S., Soni, D. Dsmish SMS-A System to Detect Smishing SMS. *Neural Comput & Applic* (2021).
- ❖ Dutta, P. Agarwal, A. Mittal, and S. Khandelwal, "Detecting grades of diabetic retinopathy by extraction of retinal lesions using digital fundus images," *Research on Biomedical Engineering* (2021).
- ❖ Suruchi Gera, Adwitiya Sinha, "A Machine Learning-based Malicious Bot Detection Framework for Trend-centric Twitter Stream," *Journal of Discrete Mathematical Sciences & Cryptography*, Taylor & Francis, vol. 24, issue 5, pp. 1337-1348 (2021).
- ❖ Deepanshi, Adwitiya Sinha, "Self-Aware Contextual Behavior Analysis for Service Quality Assurance over Social Networks," *Journal of Cases on Information Technology*, IGI Global, pp. 1-17 (2021).
- ❖ Ravindran, Urshila, Pragya Bhardwaj, and P. Raghu Vamsi. "Blockchain Design for Securing Supply Chain Management in Coffee Retailer Network." (2021).
- ❖ Vamsi, P. Raghu, and Agrah Jain. "Practical Security Testing of Electronic Commerce Web Applications." *International Journal of Advanced Networking and Applications* 13, no. 1 (2021).
- ❖ P Raghu Vamsi, Agrah Jain. "GETTING STARTED WITH ANDROID MOBILE APPLICATIONS SECURITY TESTING." *Scientific and practical cyber security journal* (2021).
- ❖ Sharma, A., Kaur, P. TOSDS: Tenant-centric Object-based Software Defined Storage for Multitenant SaaS Applications. *Arab J Sci Eng* 46, 9221–9235 (2021).

- ❖ Priti Kumari, Parmeet Kaur, A survey of fault tolerance in cloud computing, Journal of King Saud University - Computer and Information Sciences, Volume 33, Issue 10 (2021).
- ❖ Yadav, V.K., Andola, N., Verma, S. and Venkatesan, S. A Survey of Oblivious Transfer Protocol. ACM Computing Surveys (CSUR) (2021).
- ❖ M Ramzan, S Dawn. Analyzing and identifying Oscillatory activities of emotions based on Electroencephalography signals using Power Spectral Density and Spatial filtering techniques. International Journal of Biomedical Signal Processing and Control, Vol. 71 (B) (2021).
- ❖ Garg, V, Sahoo, A, and Saxena, V. A cognitive approach to Endometrial Tuberculosis Identification using Hierarchical Deep Fusion Method. Soft Computing (2021).
- ❖ Kaur, A., Gupta, G. P., & Mittal, S. Comparative Study of the Different Variants of the DV-Hop Based Node Localization Algorithms for Wireless Sensor Networks. Wireless Personal Communications, 1-43 (2021).
- ❖ Andola, N., Prakash, S., Yadav, V.K., Venkatesan, S. and Verma, S. A Secure Searchable Encryption Scheme for Cloud using Hash-Based Indexing. Journal of Computer and System Sciences (2021).
- ❖ Adwitiya Sinha. PSIR: A Novel Phase-wise Diffusion Model for Lockdown Analysis of COVID-19 Pandemic in India. System Assurance Engineering & Management, Springer, pp. 1-17 (2021).
- ❖ Arora, A., Jayal, A., Gupta, M., Mittal, P., & Satapathy, S. C. Brain Tumor Segmentation of MRI Images Using Processed Image Driven U-Net Architecture. Computers, 10(11), 139 (2021).
- ❖ Jain, Arti, Anuja Arora, Divakar Yadav, Jorge Morato, and Amanpreet Kaur. Text Summarization Technique for Punjabi Language Using Neural Networks. The International Arab Journal of Information Technology, Vol. 18, No. 6 (2021).



## *International Conferences*

- ❖ Roop Singh, Alaknanda Ashok, and Mukesh Saraswat. 2021. Robust Video Watermarking in Frequency Domain for Copyright Protection. In 2021 Thirteenth International Conference on Contemporary Computing (IC3-2021) (IC3 '21). Association for Computing Machinery, New York, NY, USA, 174–178.
- ❖ Akshat Jain, and Neeraj Jain. Locally Linear Embedding based Indoor Localization in Internet of Things. In 2021 Thirteenth International Conference on Contemporary Computing (IC3-2021), pp. 388-393. 2021.
- ❖ Vijh, S. Kumar and M. Saraswat. Efficient Feature Selection Method for Histopathological Images Using Modified Golden Eagle Optimization Algorithm. 2021 9th International Conference on Reliability, Infocom Technologies and Optimization (Trends and Future Directions) (ICRITO), 2021, pp. 1-5.
- ❖ P. Agarwal, N. Farooqi, A. Gupta, S. Mehta, and S. Khandelwal. A New Harris Hawk Whale Optimization Algorithm for Enhancing Neural Networks. International Conference on Contemporary Computing, 2021, pp. 179–186.
- ❖ Samir Kumar Pandey, Shiv Shankar Prasad Shukla, Anil Kumar Yadav, Dharmveer Singh Rajpoot, e-Epidemic Model on Covid-19: A Fuzzy Approach, pp 328—332, 13th IC3 2021.
- ❖ Porwal, S. and Mittal, S., 2021. A Novel Threshold Secret Sharing Scheme for CP-ABE. Submitted in Thirteen International Conference on Contemporary Computing (IC3 2021).
- ❖ Neetu, NS, Sardana and Arpita Jadhav, AJB, Bhatt. 2021. Detection of iOS Malware apps based on Significant Services Identification using Borda count. In 2021 Thirteenth International Conference on Contemporary Computing (IC3-2021)
- ❖ Neetu, NS, Sardana, Dhanshree DST Tejawani, Tanvi TT Thakur, Mansi MM Mehrotra, 2021. Topic Wise Influence Maximisation based on fuzzy modelling, Sentiments, Engagement, Activity and Connectivity Indexes. In 2021 Thirteenth International Conference on Contemporary Computing (IC3-2021)
- ❖ Priyanshu Sehgal, Bhavika Bhutani, Neha Rastogi, Adwitiya Sinha, Megha Rathi, “AI Driven Identification of Fake News Propagation in Twitter Social Media with Geo-Spatial Analysis,” ACM 13th International Conference on Contemporary Computing (IC3-2021)
- ❖ Ravindran, Urshila, and P. Raghu Vamsi. A Secure Blockchain based Finance Application. In 2021 Thirteenth International Conference on Contemporary Computing (IC3-2021)
- ❖ Rastogi, Tanya, Vikas Hassija, and Vikas Saxena. "Quantum Communication: Concept, Applications, and Future Outlook." In 2021 Thirteenth International Conference on Contemporary Computing (IC3-2021)
- ❖ Jain, N., & Bansal, H. (2021, September). Anomaly Detection in Crowded Places. In 2021 9th International Conference on Reliability, Infocom Technologies and Optimization (Trends and Future Directions). IEEE.

- ❖ Neetu, NS, Sardana and Arpita Jadhav, AJB, Bhatt. 2021. Detection of iOS Malware apps based on Significant Services Identification using Borda count. In 2021 Thirteenth International Conference on Contemporary Computing (IC3-2021)
- ❖ Aman Patel, Kavita Pandey, Harsh Yadav and Piyush Saraswat. IOT Based System for Crop Prediction and Irrigation Control. 2021 IEEE 8th Uttar Pradesh Section International Conference on Electrical, Electronics and Computer Engineering (UPCON)
- ❖ Pathak, Sashakt, Arushi Agarwal, Ankita Ankita, and Mahendra Kumar Gurve. Restricted Randomness DBSCAN: A faster DBSCAN Algorithm. In 2021 Thirteenth International Conference on Contemporary Computing (IC3-2021)
- ❖ Goyal, Adit, Vikas Hassija, and Victor Hugo C. de Albuquerque. "Revisiting Machine Learning Training Process for Enhanced Data Privacy." In 2021 Thirteenth International Conference on Contemporary Computing (IC3-2021)

### *Book Chapters*

- ❖ Sardana N, Bhatt A. J., "Exploratory study of existing approaches for analyzing epidemics." Leveraging Artificial Intelligence in Global Epidemics edited by Le Gruenwald, Sarika Jain , Sven Groppe. Elsevier Academic Press, 2021, pp. 107–129
- ❖ Sardana N, Bhatt A. J., "Exploratory study of existing approaches for analyzing epidemics." Leveraging Artificial Intelligence in Global Epidemics edited by Le Gruenwald, Sarika Jain , Sven Groppe. Elsevier Academic Press, 2021, pp. 107–129
- ❖ Raju Pal, Subash Yadav, Pushpendra Kumar Rajput, and Anand Nayyar. "Automated Methods for the Detection of Green Land in Satellite Images." , Fadi Al-Turjman, Anand Nayyar, Ajantha Devi, Piyush Kumar Shukla (eds) In Intelligence of Things: AI-IoT Based Critical-Applications and Innovations, pp. 145-165. Springer, Cham, Oct., 2021.
- ❖ P. Agarwal and S. Mehta, "Analyzing Subspace Clustering Approaches for High Dimensional Data," Artificial Intelligence for a Sustainable Industry 4.0, pp. 169–195, 2021.
- ❖ P. Agarwal and S. Mehta, "Analyzing Subspace Clustering Approaches for High Dimensional Data," Artif. Intell. a Sustain. Ind. 4.0, pp. 169–195, 2021.
- ❖ Srivastava, Saurabh Kumar, Ankit Vidyarthi, and Sandeep Kumar Singh. "Modified ML-KNN: Role of similarity measures and nearest neighbor configuration in multi-label text classification on big social network graph data." (2021).



## ***PhD Awarded***

### ❖ **Ms Anubhuti Roda Mohindra**

- Title - Towards Secure Weighted Clustered Routing for MANETs
- Awarded on – July 2021
- Supervisor – Dr. Charu Gandhi

### ❖ **Sakshi Agarwal**

- Title - Effective Techniques for Influence Maximization in Static and Dynamic Online Social Networks
- Awarded on – July 2021
- Supervisor – Dr. Shikha Mehta

### ❖ **Ankita Gupta**

- Title - Software Requirements Prioritization: Towards Handling Requirements Vagueness, Dependency and Collaboration
- Awarded on – August 2021
- Supervisor – Dr. Chetna Gupta

### ❖ **Shradha Porwal**

- Title - Enhancements to the CP-ABE Schemes for Secure Communication
- Awarded on – August 2021
- Supervisor – Dr. Sangeeta Mittal



## ***PhD Awarded***

### ❖ **Vartika Puri**

- Title - Effective Techniques for Privacy-Preserving Publication of Transactional Data
- Awarded on – October 2021
- Supervisor – Dr. Parmeet Kaur

### ❖ **Gaurav Kumar Nigam**

- Title - Hierarchical Cluster Based Routing Protocols in Wireless Sensor Networks
- Awarded on – October 2021
- Supervisor – Dr. Chetna Dabas

### ❖ **Priti Kumari**

- Title - Efficient Protocols for Recovery from Failures in Cloud Computing
- Awarded on – November 2021
- Supervisor – Dr. Parmeet Kaur

### ❖ **Vikas Hassija**

- Title - Blockchain-Based Transparent and Secure Algorithms for Specific Domains of the Internet of Things
- Awarded on – December 2021
- Supervisor – Prof. Vikas Saxena





## *Students Corner*

Students at Jaypee Institute of Information Technology always believed on the fundamentals of learning by doing and apply constant efforts in the same direction to achieve success. Highly motivated students try new things all the time and work on many projects all the time. The minor and major projects provide them the platform to learn and explore new technologies and apply them to solve many real world problems. Few of the project highlights are as follows:

1. A team of students i.e. Shubh Gupta, Abhinav Shamra, Chirag Sharma, Shreyash Rautela worked on cyberbullying detection using deep learning models under the mentorship of Dr. Arti Jain.
2. Dr Shruti Jaiswal helped a group of students Samarth Sajwan, Rudraksh Bhardwaj, Revaan Mishra to create student placement prediction application that takes into account various parameters like coding aptitude, GPA score like parameters and predict if student has high chances o get placed in the companies.
3. A team of Bhartendu Dubey, Parikha and Shashank Varshney under the guidance of Dr. Himani Bansal created an application to detect Osteosarcoma Detection. It's a type of cancer that begins in the cells that form bones.
4. Gaurav Anand, Priyanshu Kumar, Saksham Madan, Bhavya Varshney create an online shopping mart named as IOTA Shooing Application under expertise of Dr. Payal Khurana Batra

## *Alumni Spotlight*

Jaypee Institute of Information Technology has a strong legacy of placing students in top MNC's around the globe. Our students have made this institution proud in every sphere whether its the tech giants or smart startups to solve day to day challenges for many. At JIIT, it is believed that a strong computational thinking and problem solving skills are must to be successful computer science engineer. Following the tradition we arranged a session by two of our alumni who have been doing this for years and will be continuing to do this in the future as well.



Aman Sharma (Ex-Google, now a reliability engineer with LinkedIn) and Anmol Mishra (SDE-II at Expedia) delivered an active session with students in month of November for sophomore and pre-placement year students to help and guide them, so to thinking computationally and rationally towards any challenge. The session was conducted online and more than 100 people including faculty and students joined to share knowledge and expertise of our prestigious alumni members.

## *Student Counselling Centre*

With every new year students pass and a batch of fresh students enter IIIT, we believe that a healthy and stable mindset always helps to create more efficient and ethical work practices. Thus, we have student counseling centre that provides constant guidance and support to the students. The activities for the past semester are as follows:

1. Meeting with new students took place on 25th of September, where the head of department with all faculties welcomed the freshman-year students. Also, it was considered that all faculty members are suggested to treat all students with patience and compassion, if they have any doubts or confusion about any issue related to the CSE & IT department.
2. A group of students made regular visits to hostels/classes/ Learning resource center and laboratories, to make new students aware of the protocols to be obeyed. This helped the new students to solve various day to day challenges.
3. At IIIT we ensure a healthy and favorable environment for the students to share their academic, social and emotional concerns. A faculty members have been assigned to carry out the task to instruct and help students. Also, provide them with suitable guidance.
4. Dr. Dharamveer ( IIIT-62) and Mr. Bansidhar ( IIIT-128) conducted mentorship programs to develop and assist students with counseling programs.
5. A session by Prof Vikas Saxena ( HoD- CS/IT) to provide guidance and motivation to students in exploring various career avenues through lectures by inviting eminent personalities from academia, industries and renowned organizations was held on 28th September 2021.

## Industry Academia Collaboration

The interaction between industry and technical institutions is an essential need that ensures the industry practices meets theory. There is an urgent need to prepare engineering students for jobs in industries, by exposing them to newer technologies and engineering methodologies. The Institute Industry Linkage Cell (IILC) at Jaypee Institute of Information Technology, Noida is established with the following objectives:

- To nurture the strong interaction culture with industry
- To invite industry leaders to address and familiarize the students about various aspects of industrial practices
- To organize trainings in specialized areas for the students and teachers by the industry experts
- To arrange Faculty Development Programs (FDPs) by associating the experts from industry
- To organize Skill Development Programs in collaboration with industry
- To facilitate faculty to carry out Research & Development Project in association with the industry
- To arrange specialized lectures on entrepreneurship for students by the industry experts
- To organize Conferences / Seminars / Workshops / Exhibitions / Start-up Initiative Meets / Hackathons in association with the industry

### Activities conducted during July-2021 to Dec-2021

S.N	Topic	Expert	Date
1	FDP: Machine learning for Internet of Things(IoT), Natural Language Processing & Computer Vision	Kunal Pruthi (Manager) MotherSumi Infotech, Noida	16-07-2021
2	FDP : Machine learning for Internet of Things(IoT), Natural Language Processing & Computer Vision	Akhilesh Mishra (Application Engineer) Mathworks, Texas, USA	20-07-2021
3	Expert Talk : Simplifying Building Intelligent Apps using Cloud and AI	Mr.Kasam Shaikh (Lead Cloud Architect) Capegemini	25-09-2021
4	Expert Talk : Software Engineering	Mr. Anmol Mishra and (S/W Developer) Expedia, Mr.Aman Sharma(S/W Developer) LinkedIn	27-11-2021
5	Academic Council Meeting	Mr. Subhash Verma (MD) Aginity India Tech Pvt. LTd, Dr. Arup Kumar Das (Director) Ericsson India Global Services Private Limited, Mr. Subhash Verma (MD) Aginity India Tech Pvt. LTd	30-11-2021
6	Expert Talk : Coding with industry perspective-C Programming	Mr.Krishna Joshi (Senior Software Engineer) CISCO at Bangalore, India	04-12-2021
7	Refresher- Expert Talk-Importance of Cyber Security in Banking Sectors	Dr Sangeeta Mittal (Associate Professor), CSE, IIIT	22-12-2021



## ***The whole hullabaloo around 5G?***

***Dr. Anubhuti Roda Mohindra***

In simplistic terms, 5G is the fifth-generation technology standard for broadband cellular networks. Cellular operators across the world have been researching, deploying, and reaping the benefits of 5G since 2019. As India ushers in the advent of 5G in the domestic market it is imperative to have a look at the biggest transformation in the realm of mobile broadband.

It is commonly known that looking at the market potential of 5G there are umpteen use cases that can be derived which can harness the value of 5G, deliver and solve real world problems thereby prompting the need to invest in 5G.

Some exciting Use Cases that can be Solved using 5G:

**Agricultural Productivity & Output:** With the ability of advanced computing capabilities, software led network, with an orchestration layer to boot the ability to take precise decisions will only become better. This will help in smart farming, essentially leveraging big data, the capability of the cloud and IoT to track, monitor, automate and analyze data points for better accuracy and output.

**Education – Improving Reach & Efficiency:** If the world has been taught a big lesson due to the pandemic, it surely has to include “Education” as an industry that pivoted the fastest and still continued to deliver growth in terms of business & revenue. However, without 5G students and educators across the country were forced to rely on unstable network connectivity thereby limiting the learning capacity and impacting cognitive growth. With 5G’s high speed, capacity enhancement and higher robustness coupled with reliability, remote education (both educators and students) stand to benefit the most.

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**Healthcare – Smarter & Efficient:** Just the way Education as an industry pivoted, the industry that came under the scanner was Healthcare. In fact, with critical cases mounting to unprecedented numbers during the pandemic, the absence of a stable technology provider like 5G was missed sorely. Capabilities from 5G can be the difference between life & death of a patient and use cases around, monitoring the patient remotely, remote diagnostics and AI enabled intervention & surgery are welcome.

**Retail Experience Enhancement:** Across the globe, retailers are leveraging technology to engage with deeper metrics and offer more personalized experiences to the consumers. A core use case of leveraging 5G comes in the form of Augmented Reality or AR to virtually showcase the retail showrooms and thereby enable the user to visit a store virtually. Apart from this, personalized content across applications pushed to the end user and notifications in the form of customer’s unique profile are some of the added benefits of how 5G can be leveraged.

**Additional Use Cases around Government services, Utilities, Mining, & Manufacturing:** Administrative outfits across the globe are steadfastly leveraging 5G to deliver tailored content and services to end users (citizens) and cross leverage multiple different infrastructure, sites to provide for a seamless experience. Apart from this, a huge amount of optimization can be achieved in the manufacturing sector, where timely inputs can vastly improve processes and end outcomes. Technology owners in organizations both Telecom and end users will continue the need to identify, evangelize and deploy use cases that continue to solve real-world problems and ascertain how 5G can be the real game changer of this decade.

# ***Some Best Practices to Make Software Development more Secure***

***Abhishek Bhati***

***Enrollment Number: 9917103139***

With the growing amount of cyberthreats and a world that is moving online at an exponential rate, the times are necessitating developers to follow the best cybersecurity practices. It is not a secondary thing anymore, but a critical part of the Software Development Cycle that needs to be followed habitually. A cyberbreach can cause an organization millions of dollars on average. The additional costs of reputational damage increase this amount further. Most of the time, it has been observed that cyberattacks can be prevented or at least the damage from them can be minimized if some simple practices are adopted by all the stakeholders involved. So, here are some easy to follow guidelines to make your projects more secure on the internet.

## **Choose and Manage Your Passwords Very, Very Carefully**

You might think, “Well, this is a very common thing. Everyone keeps their password secure.” and yet, this is one of the most common reasons for multiple large scale cyberattacks. The systems of a vast number of companies have been breached due to weak password policies. Company-name@123 has been one of the most common passwords being used by developers for even sensitive access to assets like VPN connection, development environments and many more.

Here are some points for a good password policy:

- It is mandatory to use a good combination of Uppercase and Lowercase letters, special symbols, and numbers in your password.
- Your password should be at least 8 characters long at the bare minimum and preferably, it should be more than 16 characters long.
- You should not use any password from at least 5 of your last used passwords while changing your password.

→ The password should not contain part of the username, real name of the user, their commonly known personal details like DOB or phone number, company name, or any word spelled completely.

→ Do not use default credentials for any services, including third party services.

Even if you are using software from a third party vendor, ensure that you get it changed from them, if the option for the same is not available on your end. Many times, passwords for third party software that is not available in documentation is available on the forums being used by developers for community help in debugging.

Besides implementing a strong password policy, an organization should also mandate changing the password compulsorily after a fixed period of time like 3 months or less and after any suspicious event or attempt of a cyberattack. Also, a proper alert system should be in place giving users an alert whenever their password is changed. This can help in minimizing the damage if a user's credentials are compromised.

### **Don't use Hard-coded credentials in Application Source Code wherever possible**

It is recommended not to use credentials in plaintext for authentication to various services or API calls while writing the source code of the application. There are multiple ways in which application source codes are often accessed by attackers. However, the possibility of exploiting the services is greatly minimized if the attacker doesn't have the proper credentials. It increases the effort, time and resources required by the attacker for a successful exploitation and at the same time, gives the organizations a bigger window of opportunity to identify and take preventive measures as part of the responsive practices. Ensure that you don't store passwords of the users in plaintext format in any database, and store them using a strong hashing algorithm.

### **Keep the Public Code Repositories of Your Project In check**

If you are using services like GitHub and Postman to build your project, and you are habituated to upload code on these services, it is very much necessary to keep checking these repositories regularly. Even if you are publishing only test code on these services, if they are left out in the open, then they can reveal sensitive information to attackers.

These can include application source code which can be used to find many vulnerabilities, hard-coded credentials, or it can also give an idea to the attacker about the level of security practices being followed by that particular department of the organization while writing code. Postman API collections can also provide a lot of information about the working of the various components of an application. It has been further observed that many developers leave the API calls in publicly available API collections on Postman which can then simply be used by attackers to extract, delete or modify data. If you have particular need to share the code publicly, then double-check your code before publishing it on any platform.

### **Developer Comments**

Developer comments are one of the easiest ways to gain information about the application and its working if an attacker gets application source codes are often accessed by attackers. However, the possibility of exploiting the services is greatly minimized if the attacker doesn't have the proper credentials. It increases the effort, time and resources required by the attacker for a successful exploitation and at the same time, gives the organizations a bigger window of opportunity to identify and take preventive measures as part of the responsive practices. Ensure that you don't store passwords of the users in plaintext format in any database, and store them using a strong hashing algorithm.

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### **Developer Comments**

Developer comments are one of the easiest ways to gain information about the application and its working if an attacker gets hold of the source code. Many times, developers even mention PII (Personally Identifiable Information) and plaintext credentials in the comments. This is specially true in case of legacy web applications. So, remove all the developer comments before deploying an application to production environment. If necessary, keep a backup of the code with comments some place safe.

### **Open S3 Buckets**

Usage of cloud services has been on the rise ever since their arrival, and this has raised a new kind of threat landscape in the cyberspace. Various cloud services mostly provide a common way of storing the files in the form of storage blocks. Among all the vulnerabilities that arise in this regard, one of the most common ones is the public accessibility of storage blocks like S3 Buckets in AWS and Azure Blob storage. This can provide an attacker with various ways to gain access to system and sensitive information. It can also provide an attacker to host their own files, thereby leading to website defacement or using up storage space on the containers, which can increase the bills for the targeted company. Needless to say, this can cause financial and reputational damage for an organization.

### **Principle of The Least Privileges**

It is very common, easy, and comfortable to give most privileges to users and developers. However, this can cause havoc in case of a breach. If a user requiring low privileges has access to even those resources that aren't required, then this expands the horizon of exploitation for an attacker. Also, since junior developers in organizations are less sophisticated in terms of coding practices, they are more likely to fall prey to a cybersecurity attack. Hence, provide the least amount of privileges necessary for the task to the users of various systems and tools deployed by your organization. Segregating users into roles can help in managing the privileges to a huge extent.

**Suspicious Links and Emails**

The good old social engineering is one of the most effective ways that attackers use to carry out successful cyberattacks. If you think that developers being tech-savvy individuals don't fall for such attacks, you might be proven very wrong. Proper awareness regarding phishing emails is required to ensure that no user clicks on a link or interacts with an email that can lead to sensitive data falling into the hands of an attacker. Also, proper communication channels should be present within development teams and the IT Security department for reporting any suspicious communication received from external sources or even internal sources within an organization.

**Suspend the services that are not being Used**

Do not leave that AWS EC2 instance open after its use cases have been completed. Open services and tools that are left out without being shut down even after their requirements have been exhausted can provide a very good entry point for any external attacker. Ensure that you keep track of all the online assets that you use in your software development process and close down everything that isn't needed. This can help you save some money on the bills and can drastically reduce the attack surface your organization is exposed to.

**Update Your tools and Services**

This point simply can't be repeated enough number of times. Always ensure that you are regularly updating the tools and services that you are using. Multiple new vulnerabilities are discovered everyday by researchers, and multiple patches are released by software vendors to fix them. While this process of regularly updating your software can seem to be exhausting and time-consuming, it increases the security of your systems by leaps and bounds. Most of the exploitation following a successful breach happens because of unpatched software programs being used by organizations. Using various threat detection and prevention programs is also advisable. They can alert you regarding any possible threat actor and also regarding the updates for various services and programs.

So, these are some of the best practices that you can follow and turn them into a habit while developing projects. If you are the owner or manager of a software or application within an organization, it is also advisable to regularly conduct Application, Network, Cloud security assessments, Source Code reviews, and Red Teaming exercises via a third party cybersecurity company or by internal security team to minimize the vulnerabilities and assess the breach exposure and threat level to your organization in the cyberspace.

## *Upcoming Events 2022*

- ❖ July 4-9, 2022 – One Week Online Faculty Development Program (FDP) on “Full Stack Engineering”
- ❖ August 4-6, 2022 – 14<sup>th</sup> International Conference on Contemporary Computing
- ❖ April 14-16, 2022 – First IEEE International Conference on Informatics (ICI-2022)
- ❖ June 13-17, 2022 – One Week Online Faculty Development Program (FDP) on Green IoT for Sustainable Development
- ❖ June 20–July 2, 2022 - Two Weeks Summer school on “Quantum Computing and Its Applications”









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**(Deemed to be University under Section 3 of UGC Act 1956)**