SVNIT

NEWSLETTER

September 2022, Issue - 7

संगणक विज्ञान एवं अभियांत्रिकी विभाग
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Department Mission

Impart education that encourages students to read critically, reason analytically, communicate persuasively, apply professionally and prepare them to excel in the field of computing.

Department Vision

The vision of Computer Science and Engineering Department is to recognize itself as a globally renowned learning centre in the field of Computer Science & Engineering and foster research and innovations for the global good.

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Message from Head of the Department

Dr. Rupa G. Mehta

It is a pleasure to head the department of CSE in SVNIT. We are a team of experienced and motivated faculty members who are in process of tuning the young engineers through innovative teaching-learning process. Highly motivated students and researchers, who are always eager to grab the opportunity to upgrade their skills are our strong team members too.

On behalf of the department, I welcome our new director, Prof. Anupam Shukla, Professor, ABV-IIITM Gwalior. The leadership of our new director has poured the encouragement to attain higher academic milestones.

In the beginning of the academic year 2022-23, I wish the best academic growth of the department in terms of very good research activities and publications, Government-funded research projects and institute-industry partnership to enhance the industrial exposure of students and faculties along with good placements of the students. I look forward for students to participate in various coding competitions, hackathons, research presentations, startup drives, sports and many other intellectual co-curricular activities and make the department proud and so the institute.

Expert Talks Organized in the Department

1. Dr. Paritosh K.Pandya, Retired Professor, TIFR, Adjunct Professor, IIT, Bombay, delivered talk on "**Intelligent Processing of Indian Music: Machine Learning for Making and Understanding Music**" on 7th July 2022.

2. Dr. Naveen Kumar Chaudhary, Professor and Dean, School of Cyber Security and Digital Forensics, National Forensic Sciences University, Gandhinagar, delivered talk on "**Research Trends in Digital Forensics**" on 23rd August 2022.

3. Col. Nidhish Bhatnagar, Director, Department of School of IT, Artificial Intelligence and Cyber Security, Rashtriya Raksha University, Gandhinagar, delivered talk on "**Emerging Trends in Cyber Domain their influence on National Security**" on 23rd August 2022.

4. Dr. Akash Thakar, Assistant Professor, Rashtriya Raksha University, Gandhinagar, delivered talk on "**Aid of Digital Forensics Techniques in Crime Investigation**"on 23rd August 2022.

5. Mr. Sanket Kumar Thakur, Scientist, PAVIS, Italian Institute of Technology, Genoa, Italy, delivered talk on "**Current State and Challenges in Egocentric Vision**" on 31st August 2022.

M. Tech. Curriculum Review Workshops Conducted at the Department

1. The department conducted a workshop to review the curriculum of proposed M. Tech. program in Computer Science and Engineering with Specialization in "Data Science", on 17th February 2022.

   Experts from Academia: Prof. R. Balasubramanian, Professor, CSE, IIT, Roorkee
                              Prof. Mayank Dave, Assistant Professor, CSE, NIT, Kurukshetra
   Experts from Industry: Dr. Pethuru Raj, Vice President, Reliance Jio, Bangalore
   Coordinators: Dr. Udai Pratap Rao and Dr. Dipti P. Rana.

2. The department conducted a workshop to review the curriculum of proposed M. Tech. program in Computer Science and Engineering with Specialization in "Information Security and Privacy", on 7th April 2022.

   Experts from Academia: Dr. Manoj Singh Gaur, Director, IIT, Jammu
                              Prof. Maniklal Das, Professor, DA-IICT, Gandhinagar
   Experts from Industry: Dr. Pethuru Raj, Vice President, Reliance Jio, Bangalore
   Experts from Alumni: Dr. Chirag Modi, Associate Professor, NIT, Goa
   Coordinators: Dr. Sankita J. Patel and Dr. Keyur J. Parmar.

Inauguration of Digital Forensics Laboratory in the Department

The department has recently setup a Digital Forensics laboratory for promoting research and development in the niche area of digital forensics. Under this, the department has procured specialized hardware and software tools for computers, mobile phones, cloud, network and social media forensics. The laboratory was inaugurated on 23rd August, 2022 by the esteemed Chief Guest **Mr. Yuvrajsinh Gohil**, Assistant Commissioner of Police (ACP), Cyber Crime Cell, Surat, Gujarat.

The event was graced by the presence of following dignitaries:

- **Col. Nidhish Bhatnagar,** Director, Department of School of IT, Artificial Intelligence and Cyber Security, Rashtriya Raksha University, Gandhinagar.
- **Dr. Naveen Kumar Chaudhary**, Professor and Dean, School of Cyber Security and Digital Forensics, National Forensic Sciences University, Gandhinagar.
- **Mr. Snehal Vakilna**, Cyber Expert and Lawyer, Surat.
- **Prof. Anupam Shukla,** Director, SVNIT Surat.
- **Prof. P.L. Patel,** Dy. Director, SVNIT Surat.
- **Prof. D. C. Jinwala,** Professor and Dean (R&C) SVNIT, Surat.
- **Dr. Akash Thakar,** Assistant Professor, Rashtriya Raksha University, Gandhinagar.

Specialized Hardware and Software procured for Digital Forensics Laboratory

1) Forensics High End Workstation

- Brand Name: Digital Intelligence
- Model: Forensic Recovery of Evidence Device-FRED
- RAM: 64GB DDR4 2666 MHz
- Hard Disk: 1TB SSD for operating system, 512GB SSD for cache, 10TB SATA hard drive for case management
- GPU: GTX 1050Ti with 4GB of GDDR5 RAM
- Display: 24 inch HD
- Write Blockers: for USB/SATA/IDE/Firewire/SAS etc.
- Retractable ventilated imaging workshelf

2) Ultrakit with TX1 Forensic Imager

- Brand: Digital intelligence
- Support imaging and cloning of hard drives greater than 2TB storage
- Support imaging of SATA,USB 3, PCLe, SAS, Firewire 800, IDE and network shares
- Contains the most popular UltraBlock hardware write blockers, the TX1 Forensic Imager, adapters, power supplies, and cables used in acquiring forensically sound images of hard drives, flash drives, network file shares, and non-standard form factor devices.
- Supports Disk-to-disk (clone),Disk-to-file (image) duplication, format, wipe, hash(MD5 or SHA-1), blank disk check etc.

3) Social Media Forensic Tool(X1 Social Discovery)

- Collects social media metadata
- Preserves chain of custody
- Collection of data from multiple social media platforms:
  - twitter
  - facebook
  - gmail
  - youtube
  - instagram
  - yahoo
  - Tumber
  - web capture etc.
- Data is stored locally on user's machine

4) Software based Solution for Mobile Forensic and Photo Recognizer

- Brand: Cellebrite
- Lawfully access locked devices with ease
- Support for devices like,
    - Mobile phones
    - SIM cards
    - Drones
    - GPS devices and more.
- Access to 40+ apps on android device
- Get the most data out of digital devices with multiple data collection methods
- Enhanced extraction flow

5) Comprehensive Digital Investigation Platform

- Brand: Magnet forensics
- Model: Magnet axiom complete with cloud
- Support acquisition and analysis for computer, mobile and cloud evidence sources
- Dedicated workflow for Windows, Mac-OS and Linux platform
- Support different file systems including NTFS, HFS, EXT2, EXT3, EXT4, FAT32, EXFAT, YAFFS2 etc.
- Recover artifacts such as user accounts, SSH keys, scheduled tasks, log files, bash history, recent files etc.

Faculty Details

Prof. Dhiren R. Patel resumed his duty as a professor in the department after serving as a director of Veermata Jijabai Technological Institute (VJTI), Mumbai, for five years.

Prof. Devesh C. Jinwala was awarded Senior Membership, ACM and Senior Membership, IEEE. He is continuing as the Dean(R&C) of SVNIT. He taught a module in the Smart and Sustainable Cities in the Institute Elective course at IIT Jammu, on invitation as an Adjunct Professor during the spring semester 2021-22. He is associated with IIT Jammu with respect to supervising PhD students, the Standing Executive Committee member for Visiting/Adjunct faculty selection etc. He is the member of Technical Review Committee in Kalam Centre for Science and Technology (KCST), DRDO Advanced Technology Centre at Central University Jammu. He is the member of Board of Studies at DA-IICT Gandhinagar, Pandit Deendayal Petroleum University, Gandhinagar, Parul University, Vadodara, SGSITS, Indore and Sarvajanik University, Surat. He is among the Faculty Selection Panel for Selection of faculty in Computer Science and Engineering under School of Engineering, Indrashil University and that at MIT World Peace University, Pune. He is the member of PhD Research Progress Evaluation Committees in Nirma University, Ahmedabad University, CHARUSAT University, and GTU.

Expert Lectures Delivered by FacultyMembers

1. Prof. Devesh C. Jinwala delivered talk on "Pointers in C and Orientation talk for B.E.-I students" for the students of the IT discipline, Chandubhai S Patel Institute of Technology, CHARUSAT, Changa on 6th May, 2022.

2. Dr. Udai Pratap Rao delivered talk on "Security architecture against Sybil attack in RPL-based IoT networks" at AICTE-GTU sponsored FDP on Recent Trends and Future Directions in Information Security organized by L. D. College of Engineering, Ahmedabad, Gujarat during 21st to 26thMarch, 2022.

3. Dr. Dipti P. Rana delivered talk on "Data Ecosystem" in GUJCOST sponsored Six Days STTP on Data Analytics and Visualization at Information Technology Department, Sardar Vallabhbhai Patel Institute of Technology, Vasad, Gujarat on 5th July, 2022.

4. Dr. Keyur J. Parmar delivered talk on "Blockchain-based Strategies for Healthcare", AICTE-ISTE Sponsored Six Days Faculty Development Programme (Refresher Program) on Blockchain Technologies and Applications, Department of Computer Engineering, Pacific School of Engineering, Surat, Gujarat, during 14th to 19th February, 2022.

5. Dr. Keyur J. Parmar delivered talk on "Enhancing Mobile Application Security using Blockchain Technology", Department of Information Technology, Parul University, Vadodara, Gujarat, India, jointly with L&T-S&L, NASSCOM, NIRVEDHA-Tech and Advanced Technology Institute, University of Surrey, UK, 3rdJune 2022.

PhD Completed

Mr. Jenish Dhanani (D15CO002) defended his PhD thesis titled "Scalable Learning of Text Embedding for Big Data: Dictionary based Approaches for Sentiment Analysis of Informal Text and Recommendation System for Formal Text" on 11[th]February, 2022. He worked under the supervision of Dr. Rupa G. Mehta, Associate Professor, and Dr. Dipti P. Rana, Assistant Professor, Department of Computer Science and Engineering.

Ms. Unnati S. Shah (D15CO003) defended her PhD thesis titled "Analysis and Investigation of Novel Approaches for Specification and Identification of Conflicts in Non-functional Requirements" on 18[th]May, 2022. She worked under the supervision of Dr. Sankita J. Patel, Assistant Professor, and Prof. Devesh C. Jinwala, Professor, Department of Computer Science and Engineering.

Mr. Ankur O. Bang (D18CO001) defended his PhD thesis titled "Investigating and Devising Security Solutions for Resource Constraint IoT Devices Operating on 6LoWPAN Protocol Stack" on 15[th]July, 2022. He worked under the supervision of Dr. Udai Pratap Rao, Assistant Professor, Department of Computer Science and Engineering.

Student Achievement

Department of Computer Science and Engineering won Runner in Inter-department Chess Tournament. The following students participated in this event:

1) Bhagya Rana (U19CS012)
2) Jainesh Machhi (U21CS133)
3) Kaushik Bhowmick (U21CS022)
4) Sanskar Jaiswal (U20CS087)
5) Phani Aditya Chakka (U21CS028)

Alumni Information

Dr. Jenish Dhanani, Department of Computer Science and Engineering, is currently working as Co-Founder of CoreAI Machine & Deep Learning Services.

Vandit Shah, Department of Computer Science and Engineering got Gate Score 837 and All India Rank 94.

Shubham Patil, Department of Computer Science and Engineering, is currently doing MS in Computer Science, University of California San Diego.

Rishipal Yadav, Department of Computer Science and Engineering, is currently doing M. Eng. in Cyber security Graduate Program, University of Maryland, USA.

Aksh Patel, Department of Computer Science and Engineering, is currently doing Master of Science in Computer Science program, Arizona State University, USA.

Komal Kolte, Department of Computer Science and Engineering, is currently doing Post Graduate Programme in Management (PGP), Indian Institute of Management, Kozhikode.

Dr. Kamal Macwan, Department of Computer Science and Engineering, is currently Postdoc Research Fellow, Loria, Nancy, France.

Dr. Unnati S. Shah, Department of Computer Science and Engineering, is currently working as Assistant Professor in Utica, New York, USA.

Harsh Mithaiwala, Department of Computer Science and Engineering, is currently doing Master of Applied Computer Science, Concordia University, Canada

Sandeep Rawat, Department of Computer Science and Engineering, is joining as Professor in the School of Computer & Information Science (SOCIS), Indira Gandhi National Open University (IGNOU), New Delhi, India in September 2022.

Publications

1. Anshuman Patel and Devesh C. Jinwala, "A reputation-based RPL protocol to detect selective forwarding attack in the Internet of Things.", International Journal of Communication Systems. Vol. 35, Issue 1, 2022.

2. Ankur O. Bang, PallaviKaliyar, Mauro Conti and Udai Pratap Rao, "Assessment of Routing Attacks and Mitigation Techniques with RPL Control Messages: A Survey", ACM Computing Surveys, 55, 2, Article 44, pp. 1-36, 2022.

3. Gordhan B. Jethava and Udai Pratap Rao, "User Behavior-based and Graph-based Hybrid Approach for Detection of Sybil Attack in Online Social Networks.", Computers and Electrical Engineering, Elsevier, vol. 99, pp. 1-13, 2022.

4. Ankur O. Bang and Udai Pratap Rao, "Design and Evaluation of a Novel White-box Encryption Scheme for Resource-constrained IoT Devices", Journal of Supercomputing, Springer, vol. 78, 2022.

5. Gordhan B. Jethava and Udai Pratap Rao, "A Novel Trust Prediction Approach for Online Social Networks Based on Multifaceted Feature Similarity", Cluster Computing, Springer, pp. 1-15, 2022.

6. Ankur O. Bang and Udai Pratap Rao, "EMBOF-RPL: Improved RPL for Early Detection and Isolation of Rank Attack in RPL-Based Internet of Things", Peer-to-Peer Networking and Applications, 2022, Springer, vol. 15, 2022.

7. Nikunj Domadiya and Udai Pratap Rao, "ElGamal Homomorphic Encryption based Privacy Preserving Association Rule Mining on Horizontally Partitioned Healthcare Data", Journal of The Institution of Engineers (India): Series B, Springer, 2022.

8. Suryansh Raj Singh, Harsh Mithaiwala, Nirav Chauhan, Parth Shah, Chandan Trivediand Udai Pratap Rao, "Decentralized Blockchain-Based Framework for Securing Review System", in

the proceedings of International Conference on Security, Privacy, and Data Analytics (ISPDA 2021), Springer, pp.239-255, 2022.

9. Nishtha Srivastava, Ashish Chaudhari, Nidhi Joraviya, Suprio Ray, Bhavesh N. Gohil and Udai Pratap Rao, "A Review of Machine Learning-Based Intrusion Detection System on the Cloud", in the proceedings of International Conference on Security, Privacy, and Data Analytics (ISPDA 2021), Springer, pp. 303-317, 2022.

10. AnkurO. Bang, Pethuru Raj, Alok Kumar and Udai Pratap Rao, "White-Box Encryption Scheme for Resource-constrained IoT Devices", in the proceedings of International Conference on Security, Privacy, and Data Analytics (ISPDA 2021), Springer, pp. 257-268, 2022.

11. Ankur O. Bang, and Udai Pratap Rao, "System and Method for Securing Large Scale RPL Based IoT Networks," Indian Patent, 22/02/2022.

12. Himanshu K. Gajera, Deepak Ranjan Nayak and Mukesh A. Zaveri, "Fusion of Local and Global Feature Representation with Sparse Autoencoder for Improved Melanoma Classification", 44th Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC),Glasgow, UK, July 11-15, 2022.

13. Himanshu K. Gajera, Deepak Ranjan Nayak and Mukesh A. Zaveri, "Patch-based local deep feature extraction for automated skin cancer classification", International Journal of Imaging Systems and Technology, Wiley, March 2022.

14. Gautam Kumar, Sambit Bakshi, Pankaj K. and Mukesh A. Zaveri, "Who is behind the Mask: PeriocularBiometrics when Face Recognition Fails", in the proceedings of 2nd International Conference on Power, Control and Computing Technologies (ICPC2T), Raipur, India 1-3 March 2022.

15. Jay Chawla, Rohit Bakoliya, Jitendra Jat, Jignesh Jinjala, Manali Patel and Krupa N. Jariwala "Upscaling Profits in Financial Market", in 2nd International Conference on Artificial Intelligence and Knowledge Processing book title of Artificial Intelligence for Capital Market 23 March, 2022.

16. Atharva Kalsekar, Rasika Khade, Chiranjoy Chattopadhyay and Krupa N. Jariwala, "RISC-Net: rotation invariant siamese convolution network for floor plan image retrieval" in Multimedia Tools and Applications, Springer May 2022.

17. Hrishabh Sharma, Ujjawal Kumar, Amruta Mulay, Rishabh Kumar andSankita J. Patel, "Security Privacy and Data Analytics", vol. 848. Springer, Singapore, April 2022.

18. Shivangi Shukla and Sankita J. Patel, "A novel ECC-based provably secure and privacy-preserving multi-factor authentication protocol for cloud computing", Computing, pp. 1-30, Springer January 2022.

19. Kanchan Kumari, Shubham Pandey, Pritesh Kethele, Shweta Shah, Upena Dalal and Sankita J. Patel, "Design of LinkIt ONE-Based IoT System with Middleware Architecture for Healthcare Monitoring", In IoT Applications for Healthcare Systems. EAI/Springer Innovations in Communication and Computing. Springer, Cham, April 2022.

20. Hiral S. Trivedi and Sankita J. Patel, "Security and Privacy Aspects in the Internet of Things (IoT)and Cyber-Physical Systems (CPS)", In: Handbook of Research of Internet of Things and Cyber- Physical Systems, Apple Academic Press, Taylor and Francis Group, 2022.

21. Shriniwas Patil, Vadlapudi Devanand Kumar, Neduri Leela Prasanth, Pranoppal, Kasa Charan Teja, Kaushal A. Shah and Keyur J. Parmar, "Blockchain based Secure, Efficient, and Scalable Platform to Revolutionize the Organ Donation Process of Healthcare Industry", Engineering Cyber-Physical Systems and Critical Infrastructures, Proceedings of the International Conference on Intelligent Cyber Physical Systems and Internet of Things, Coimbatore, India, Publisher –Springer 11-12, August, 2022.

22. Mitali Desai, Rupa G. Mehta and Dipti P. Rana, "Anatomizing the Impact of Research Gate Followers and Followings on Influence Identification", Journal of Information Science, SAGE Publications, July 2022.

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24. Anjali S. More and Dipti P. Rana, "AI Federated Learning based Improvised Random Forest Classifier with Error Reduction Mechanism for Skewed Datasets", International Journal of Pervasive Computing and Communications (IJPCC), Emerald, vol. ahead-of-print, August 2022.

25. Isha Agarwal, Jariwala Aemie, Bondre Sahil and Dipti P. Rana, "Cluster-based Sampling for Fake News on Healthcare during COVID-19 Infodemic", Recent Advances in Electrical & Electronic Engineering, vol. 15, August. 2022.

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