MANIPAL INSTITUTE OF TECHNOLOGY
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ICT CHRONICLES

Half Yearly Newsletter of the Department of Information and Communication Technology,
Manipal Institute of Technology, Manipal Academy of Higher Education, Manipal-576104.

MESSAGE FROM THE HOD

Welcome to the new edition of the ICT Department's newsletter, ICT Chronicles 2024 first issue!.

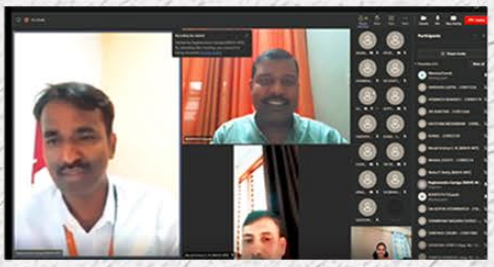
As we reflect on the past few months, it brings me immense pride to witness the vibrant set of activities and accomplishments within our department. Our calendar has been adorned with a rich array of events, including enlightening technical talks by esteemed industry experts and distinguished alumni, engaging workshops aimed at improving the skills of our students and Faculty. Moreover, our students have continued to shine brightly, showcasing their talents and achievements in various spheres, while our faculty members have pursued excellence in their research endeavors. As we move forward, let us continue to embrace opportunities for collaboration, creativity, and continuous learning, knowing that together, we can achieve even greater heights of success and make lasting contributions to our field and society at large.

EVENTS

The Department of Information & Communication Technology proudly won the 1st prize in the Technical category at Research Day organized by MIT-Manipal on April 17, 2024. This achievement, led by Research Coordinators Dr. Poornalatha G, Dr. Nisha P. Shetty, and Dr. Ritesh Sharma, highlights the department's impressive performance and accomplishments over the past three years. The department's research outputs have been remarkable, with the total number of journal publications indexed in SCOPUS/WoS increasing from 38 in 2021 to 46 in 2022 and reaching 50 in 2023. Similarly, the number of Q1 journal publications was 21 for both 2021 and 2022 but rose to 27 in 2023. The number of conference publications indexed in SCOPUS/WoS was 42 in both 2021 and 2022 and 40 in 2023. The department's H-Index stands at 35, with total citations increasing from 101 in 2021 to 111 in 2022, and 118 in 2023. Additionally, the department excelled in securing patents and external grants obtaining one patent in 2021 and six patents in 2023. The total amount received through external grants was ₹13,80,213 in 2021, ₹13,72,913 in 2022, and a substantial ₹54,27,315.76 in 2023. The Center of Excellence for Cybersecurity, supervised by Dr. Balachandra, also played a significant role in this victory. The combined efforts and remarkable achievements of the department were crucial in winning Research Day.

Research Day

"Introduction to Machine Learning"



Department. of I&CT hosted an online technical talk titled "Introduction to Machine Learning "on 3rd February, 2024 and Dr. Manasa M was featured as guest speaker. Dr. Manasa M led the discussion, focusing primarily on machine learning techniques, particularly supervised learning, linear regression, and gradient descent, illustrated with real-time examples. She emphasized the importance of mathematical models in machine learning algorithms, providing insights into their practical applications. More than 40 students attended the session. Dr. Raghavendra Ganiga, Faculty, Dept. of I&CT coordinated the talk.

"Ways to Improve Technical Knowledge"

A talk on "Ways to improve Technical Knowledge" was delivered on 9th February, 2024 by Praveen Nagaraj, an Alumnus of ICT department. Praveen Nagaraj began by clarifying the numerous benefits of technology in revolutionizing the technical field. Further, he elaborated that technology can be utilized in various ways to foster growth, whether it's personal growth, business growth, or societal development. Online learning platforms, educational apps, and digital resources provide accessible and affordable opportunities for people to enhance their knowledge and skills. From coding boot camps to language learning apps, technology enables individuals to acquire new skills and qualifications, leading to personal and professional growth. Digital platforms, crowdfunding sites, and online. The talk was coordinated by Mrs. Veena KM, Faculty, Dept. of ICT.

"Business Process Automation – An Overview"

Sujoy Choudhury, an esteemed professional and Director of Customer Relations at Microsoft Corporation, delivered an insightful technical talk on "Business Process Automation – An Overview" On 10th February, 2024. S. Choudhury began by clarifying the numerous benefits of technology in revolutionizing business operations. He emphasized how technological advancements have efficient processes, enhanced efficiency, and enabled organizations to stay competitive in the dynamic market landscape. In summary, the session provided attendees with a comprehensive understanding of the transformative potential of Business Process Automation in driving operational excellence and propelling organizations toward digital maturity. The event was coordinated by Dr. Manoj Tolani, Faculty, Dept. of ICT.

ping 2.0.2.4

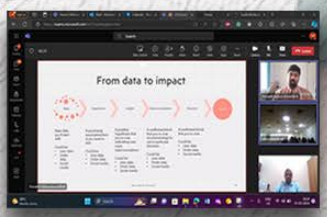
"Next-Gen Banking: Harnessing Gen AI for Financial Services"

The Department of Information and Communication Technology (I&CT), in collaboration with Deusche Bank and cYaag Technologies, organized ping 2.0.2.4 titled Next-Gen Banking: Harnessing Gen AI for Financial Services", a 2-day annual workshop held on 23rd and 24th February, 2024. The workshop focused on the theme "Next-Gen AI: Harnessing Gen AU in banking and financial sectors". Chief Guest of the inauguration ceremony was Lt.Gen.(Dr.)M.D. Venkatesh, Vice Chancellor, MAHE, Manipal.

The Guest of Honor was Mr. Rajneesh Rai, VP, Infrastructure Architecture & Cloud, Deutsche Bank, Bengaluru and Ms. Rhea Mahato, Sr. Program Manager, Payments, Amazon, Washington D.C.,USA, Presided by Cdr.(Dr.) Anil Rana, Director, MIT, Manipal, Convener. Dr. Preetham Kumar, Deputy Registrar-Academics(Technical), MAHE, Professor, Dept. of I&CT, MIT, Manipal and Co-Convener Dr. Sumith N, Associate Professor Dept. of I&CT, MIT. The 2-day workshop provided valuable insights into the models and applications of ML/AI in the

"Big Data & Business"

The department organized an online technical talk titled "Big Data & Business" on 1st March, 2024. The talk was delivered by an alumnus (Computer Science, 2013 batch). Mr. Purvabh Surana is currently serving as Senior Program Manager at Amazon. Mr. Purvabh shared valuable insights into the impact of data on e-commerce application. Mr. Surana emphasized the significance of formalized tools in optimizing these processes, illustrating the funnel approach in digital interactions from awareness to conversion.



Centre for Research in Intelligent Technologies

MIT-MAHE & Schneider Electric

MIT-MAHE in collaboration with Schneider Electric has set up a Centre for Industrial Research in Intelligent Technologies which is supported by Dr. TMA Pai Endowment Chair, Department of ICE, DSCA , ICT and Mechatronics. The Centre is in the 3rd floor, RL9, Academic block 5 . The Centre is housing equipments, Hardware and software tools and licenses used for developing next generation Industrial Automation Systems. The equipments and its installation are funded by Schneider Electric.

"Transformative Influence of Purpose-Driven Choices and the Cultivation of a Growth Mindset"

The department conducted a talk by an alumnus, Kaushaya Ganguly (BTech. IT) on 12th March, 2024 in online mode. Kaushaya Ganguly is working as Senior Cloud Solution Architect at Microsoft in Spain. The talk explored about the "Transformative influence of purpose-driven choices and the cultivation of a growth mindset", crucial elements for aligning with broader life objectives. Speaker talked about some things which happened before or during his college days. He also provided actionable takeaways directly from my journey, offering guidance for crafting a purpose-driven and fulfilling college experience. He dove into reflections on what truly matters from his college days, a decade after graduation, providing valuable perspectives for your academic and professional journey. The talk was coordinated by Mrs. Veena KM, Faculty, Dept. of I&CT.

"Interactive Session with Dr. Gang Li"

The department organized an interactive session with Professor (Dr.) Gang Li from Deakin University on 21st March, 2024. He interacted with faculty and research scholars from the DSCA and ICT departments. The primary aim of the interaction was to discuss collaboration opportunities with Deakin University's research projects. As a distinguished member of the TULIP Lab, Prof. Li provided valuable insights into the open projects available for researchers in his lab and also shared a GitHub link for further exploration of these research projects. Dr. Raghavendra Ganiga, faculty Dept. of I&CT, facilitated the event. This collaborative exchange serves as a platform for fostering interdisciplinary partnerships and advancing research endeavors.

"12 Failures in My 12 Years of Corporate Life"

The department conducted a talk titled "12 failures in my 12 years of corporate life" by an alumnus Mr. Jaideep Rao on 30th March, 2024. Speaker discussed with audience about our culture today is obsessively focused on unrealistically positive expectations: Be happier, Be the best, better than the rest. Be smarter, faster, richer, more popular, more productive, more envied & more admired. Be perfect and amazing and crap out twelve-karat gold nuggets before breakfast each morning. Then drive to your wonderfully fulfilling job, where you spend your days doing incredibly meaningful work that's likely to save the planet one day. The talk was coordinated by Mrs. Veena KM, Faculty, Dept. of I&CT.

"How to Set Yourself for Successful Software Interviews: An Honest Guide"

The department conducted a talk titled "How to set yourself for successful software interviews: An honest guide" by an alumnus Mr. Jyotinder Singh(2021 B.Tech. IT) on 30th March, 2024. The talk delivered by the speaker provided a comprehensive overview of strategies and techniques for conducting successful interviews. The speech began with an engaging introduction that captured the audience's attention and highlighted the importance of effective interviewing skills in various contexts. Throughout the speech, the speaker articulated key principles such as active listening, open-ended questioning, and building rapport with interviewees. They illustrated these concepts with real-world examples and practical tips, making the information easily applicable for the audience. The talk is coordinated by Mrs. Veena KM, Faculty, Dept. of I&CT

"Recent Trends in Machine Learning Topics"

A technical talk organized by the Department of Information and Communication Technology took place on 2nd April, 2024. Prof. (Dr.) Gang Li, Professor from Deakin University delivered a talk on Recent Trends in Machine Learning topics. Throughout the session, Dr. Prof. (Dr.) Gang Li captivated the audience with dynamic discussions centered around the transformative realm of Open Environment machine learning. Engaging the students with riveting real-time examples, Dr. Li underscored the paramount significance of Open ML in propelling cutting-edge projects for the current generation. Moreover, he delved into exciting collaboration opportunities with Deakin University's ground-breaking research initiatives. As a distinguished member of the TULIP Lab, Prof. Li provided valuable insights into the open projects available for researchers in his lab and shared a GitHub link for further exploration of these research projects. More than 40 students benefitted from the session. Dr. Raghavendra Ganiga, Faculty, Dept. of I&CT coordinated the event.

"College to Career Readiness"

An alumnus talk titled "College to Career Readiness" was organized by the Department of I&CT on 5th April, 2024 in online mode. The resource person was Mr. Himanshu Kumawat, who is the Alumnus of Dept. of I&CT, currently serving at Amazon as Software Development Manager. The audience were the B.Tech students and was an interactive session where the students' asked questions on how they could prepare for interviews during placements. Also, the resource person also spoke about the what questions could be asked during internships which are later converted into placements. He also gave a mention of the career opportunities in different domains. Dr. Krishna Prakasha, Faculty, Dept. of I&CT coordinated the event.

"The Role of R&D in an IT Organization"

An alumnus talk titled "The role of R&D in an IT organization" was organized by the Department of I&CT on 10th April, 2024. The talk was delivered by Ayushya Rao, Sr. Product developer at Makers Lab, Tech Mahindra. He thrived on tackling niche tech challenges. His passion for innovation has fueled the development of groundbreaking products for organizations of all sizes. He shared his insights on the role of R&D in the IT world. Mrs. Veena KM, Faculty, Dept. of I&CT coordinated the event.

Ashok Shettigar Retirement

Mr. Ashok Shettigar, who served as Senior Technician in the Department of I&CT, retired on April 30th 2024. Over his 34-year career at MIT, he spent approximately 22 years in the Department of I&CT. The department organized a small ceremony to show gratitude for his dedicated service and to wish him all the best for his retirement.

FACULTY ACHIEVEMENTS

Dr. Veena Mayya began her post-doctoral fellowship at the School of Global Health Management and Informatics, University of Central Florida, on 1st January, 2024.

Dr. Raghavendra Ganiga has been appointed as a reference contact at MAHE for academic purpose in the Memoradum of Understanding signed between Chosun University, South Korea and MAHE on 5th February, 2024. The key focus areas of our collaboration are Cooperative Research, Joint Workshops and Meetings, Researcher Mobility, Exchange of Academic Materials.

Dr. Sivakumar V delivered a technical talk titled "Underwater Applications of AL/ML in Environmental Studies." on 9th March 2024 organized by CINTEL, School of Computing, SRMIST, KTR. The scope of the talk benefited research scholars and professionals in enhancing their knowledge in disaster management.

Dr. Pai has received a grant of Rs. 42.48 lakhs from Schneider Electric, Bangalore, for the project titled "Exploratory research in Industrial Automation and IoT." Dr. Pai has also been awarded another grant of Rs. 67.7 lakhs by Schneider Electric Pvt. Ltd. R&D Center, Bangalore, for a project focused on predicting SOH and RUL, an estimations mode.

Dr. Manohar Pai M M, Senior Professor, Dept. of I&CT and TMA Pai Endowment Chair in Intelligent Technologies, Industry 4.0, and Sustainability, from the Department of Information and Communication Technology at Manipal Academy of Higher Education was pivotal in facilitating MAHE's strategic partnership with Schneider Electric.

Effective from January 25th, 2024, to December 31st, 2026, this collaboration aims to provide vital datasets for an AI project and to oversee and mentor MAHE students involved in the project. Dr. Manohar Pai M M is the primary contact person for MAHE in this transformative endeavor.

STUDENT ACHIEVEMENTS

CODE CRAFT HACKATHON

Sandeep Kumar Rai (CCE, BTech.) and team ranked 1 among more than 800 participants across India in the Code Craft hackathon and won the cash prize of ₹40000. The event was organized by Calypso'23, tech fest, held at T.A Pai Management Institute Manipal on 6th January 2024.

VOICE AI HACKATHON

Yash Bharadwaj
B. Tech-IT

Anirudh Agrawal (BTech. CCE) participated in the Voice AI Hackathon by Daas with our travel planning voice assistant named YatriGPT. Out of 345 teams, their team achieved a top 6 position. Team members consist of Aman Agarwal (CSE AI/ML) and Yash Bharadwaj (BTech. IT). Event started from December 2023 and results were announced on 3rd February 2024.

Anirudh Agrawal
B.Tech-CCE

AURORA CTF 2024

Team members of Crytponite have bagged all three winning positions at the Aurora CTF 2024 organised by ISTE & MIST technical clubs. The event was held on 8th February, 2024. The senior team members who have won 1st, 2nd and 3rd are Yogesh Rane and Akash from Dept of ICT and Rupak Banerjee from the Dept of CSE.

DEVSPRINT HACKATHON

Yadavalli Venkata Subra Rama Akash (BTech. IT) won the Devsprint Hackathon on February 9, 2024. The hackathon was a highlight of ISTE Manipal's flagship Techweek 2024. The winning team included Lakshay Chahaun (IT), Vaibhav Maheshwari (IT), Yvsr Akash (IT), and Utkarsh Singh (DSE). They earned first place under the theme of empowering elders with their project titled "AgeEase: Revolutionizing Elderly Care through Technology," which stood out among the participants and secured them the top prize in the hackathon.

CYBER CRIME CONCLAVE HACKATHON 2024

The Team Cryptonite, secured the prestigious 1st Runner-Up position in the Cyber Crime Conclave Hackathon 2024 held at India's premier cybersecurity conference in Bengaluru, held from 28th February, 2024 to 29th February, 2024. The diligent team members who contributed tirelessly to this success are as Shreyansh Sankrit (B.Tech CCE), Prabhakar Dev (B.Tech. CCE), Aditi Kulkarni (B.Tech. EIE) , Shreyas B S (B.Tech. IT), Krish Pandey B.Tech. EIE). The event was organized by NewsFirst Kannada and received support from the Government of Karnataka. Distinguished guests and speakers, including Dr. G Parameshwara, Honorable Home Minister, Government of Karnataka, and Priyank Kharge, Honorable IT/BT Minister, Government of Karnataka, graced the occasion.

PENTATHON 2024

Team Cryptonite comprising of Akash (B.Tech. IT), Yoghesh (B.Tech. CCE), Rupak (B.Tech-CSE AIML), Krish (B.Tech. CPS) has been qualified for the Pentathon 2024 and was recognised as one of the top teams. The teams participated here were not only students but also working professionals. Cryptonite represented at the nodal centre, Amity University , Delhi.

E-BAJA SAE

Siddharth Kaneria (Btech. IT) and Naitik Gaddikeri (Btech. IT) ,part of Team Manipal Racing Electric, participated in E-Baja SAE which is an intercollegiate design competition run by the Society of Automotive Engineers (SAE). The team has won 7th position where approximately 80 colleges and universities participated. The event was held on 9th March, 2024.

PHISHTRAP PROJECT

The project, PhishTrap, has been awarded a grant of ₹2,00,000 from the YUKTI Innovation Challenge 2023. This is the same project that won the Grand Finale Smart India Hackathon and was given the chance to participate in the YUKTI innovation challenge by AICTE. Out of total 441 teams gone through the funding assessment phase, a total of 135 innovations are found eligible to receive grant assistance from AICTE & MoE's Innovation Cell to work on their innovations to refine further and transform it into startups.

L&T CREATECH 2024

A team comprising Ishan (BTech., CSE), Ashrith Surana (BTech., IT), and Atharva Chepe (BTech., IT) bagged third position in the L&T CreaTech 2024 online competition held during May, 2024 wherein bright engineering minds from over 220 premier colleges were invited to present workable solutions to real business problems. The team developed an AI model to understand the sentiments about the company using social media feeds (such as Twitter, Facebook, LinkedIn, and other digital media inputs).

RESEARCH

A research paper titled "WBINTree: A Single Scan Based Complete, Compact and Abstract Tree for Discovering Rare and Frequent Itemset Using Parallel Technique" authored by Dr Preetham Kumar has been been published in IEEE Access in January 2024.

Dr. Sanjay Singh has filed a patent titled "System and Method for Object Detection in Autonomous Vehicles" during January 2024.

A research paper titled "Automatic Software Bug Prediction Utilizing Adaptive Golden Eagle Optimizer Combined with Deep Learning" authored by Dr. Kaliraj S has recently been published in Multimedia Tools and Applications Journal in January 2024.

A research paper titled "An efficient lung image classification and detection using spiral optimized Gabor filter with convolutional neural network" authored by Dr. V Sivakumar and Dr. Kaliraj S has been been published in International Journal of Imaging Systems and Technology in January 2024.

A research paper titled "UAV Assisted Network Coded Cooperation by Using Height Dependency Shaping Parameters in Nakagamim Faded Channel" authored by Dr Pankaj Kumar has been been published in IEEE Access in January 2024.

A research paper titled "OTONet: Deep Neural Network for Precise Otoscopy Image Classification", authored by Dr. Divya Rao, Sudiksha Kottachery Kamath (B.Tech. IT), Sanjeev Kushal Pendekanti(IT, 8th Sem), Dr. Raviraj Holla, Dr. Sucheta Kolekar, Dr. Sameena Pathan has been published in IEEE Access in January 2024.

A research paper titled "A Compact DualBand Millimeter Wave Antenna for Smartwatch and IoT Applications with Link Budget", authored by Dr. Sameena Pathan and Mrs. Sangeetha TS has been published in the journal titled "Sensors" in January 2024.

A research paper titled "Design and Experimental Study of a Coupled U and LShape Negative Index Metamaterial for Aircraft Navigation Applications" authored by Mr. Ghanashyama Prabhu has been published in IEEE Access in January 2024.

Dr. Rashmi Naveen Raj has received a research grant of Rs. 8.25 lakhs from SERB, for the project titled "Decision Support System for Delivery Management using Fetus Weight Estimation and Maternal Features" in January, 2024.

A research paper titled "FFALens: Lesion detection tool for chronic ocular diseases in Fluorescein angiography images" authored by Veena K.M, Dr. Preetham Kumar and Dr. Veena Mayya has been published in the Journal SoftwareX in Febraury 2024.

Swathi Prabhu has filed two patents titled "System for detection of tooth defects using an artificial intelligence model and method thereof" and "System for detection of tooth defects using an artificial intelligence model and method thereof " during February 2024

Dr. Pankaj has been granted the patent titled 'Solar Powered Farming Soil and Water Analyzing Device' on 9th February, 2024

A research paper titled "A compact flexible fourelement dualband antenna using a unique defective ground decoupling structure for Sub6 GHz wearable applications" authored by Dr. Sameena Begum Pathan has been been published in the journal "Results in Engineering" in March 2024.

A research paper titled "Characteristics mode analysis based wideband Sub6 GHz flexible MIMO antenna using a unique hybrid decoupling structure for wearable applications" authored by Dr. Sameena Begum Pathan has been been published in the journal "Physica Scripta" in March 2024.

A research paper titled "Noise estimation based on optimal smoothing and minimum controlled through recursive averaging for speech enhancement" authored by Dr. Chandrakala C B has been been published in the journal "Intelligent Systems with Applications" in March 2024.

A research paper titled "Empowering Safety Conscious Women Travelers: Examining the Benefits of Electronic Word of Mouth and Mobile Travel Assistant" authored by Dr. Chandrakala C B and Ms. Pooja S has been been published in the journal "International Journal of Interactive Mobile Technologies" in March 2024.

A research paper titled "A Low Profile Circularly Polarized Millimeter Wave Broadband Antenna Analyzed with a Link Budget for IoT Applications in an Indoor Scenario" authored by Dr. Sameena Begum Pathan has been published in the journal "Sensors" in March 2024.

A research paper titled "Enhancing Laryngeal Spinocellular Carcinoma Image Security with DCT" authored by Mr. Raviraja Holla M has been been published in the journal "Indian Journal of Otolaryngology and Head & Neck Surgery" in March 2024.

A research paper titled "A GPU scheme for multisecret visual sharing with varied secret dimensions and contrast enhancement using blind super resolution" authored by Mr. Raviraja Holla M has been published in the journal "International Journal of Information Technology" in March 2024.

Dr. Manohara Pai M. M, Dr.Suchetha V Kolekar, Dr. Manjunath K N, Radhika M. Pai, and Mr. Kushagra Jain (BTech. IT, 2020) from the Department of ICT has been granted a patent titled "Detection of Foot Complications (A method and device for detecting foot complications using a plantar temperature profiler)" on 30th April, 2024.

A research paper titled "A Compact wideband two element millimeter wave MIMO antenna with CMT based modified Tshaped decoupling structure for mobile applications with estimated link budget in urban scenario" authored by Dr. Sameena Begum Pathan has been been published in the journal "AEU - International Journal of Electronics and Communications" in April 2024

A research paper titled "A Collusion resistant multiparty data sharing in social networks" authored by Dr. Nisha Shetty and Dr. Balachandra has been published in the journal "A International Journal of Electrical and Computer Engineering" in April 2024.

A research paper titled "Accelerating randomized image secret sharing with GPU: contrast enhancement and secure reconstruction using progressive and convolutional approaches" authored by Mr. Raviraja Holla M has been published in Multimedia Tools and Applications in May 2024.

A research paper titled "Decoding sarcasm: unveiling nuances in newspaper headlines" authored by Mr. Raviraja Holla M has been published in the International Journal of Electrical and Computer Engineering in May 2024.

A research paper titled "Software Fault Prediction using Cross-Project Analysis: A Study on Class Imbalance and Model Generalization" authored by Dr. V. Sivakumar and Dr. S. Kaliraj has been published in IEEE Access in May 2024.

A research paper titled "An Improved and Optimized Random Forest Based Approach to Predict the Software Faults" authored by Dr. S. Kaliraj has been published in SN Computer Science in May 2024.

A research paper titled "ContourNet: An automated segmentation framework for detection of colonic polyps" authored by Ms. Sameena Begum Pathan has been published in IEEE Access in May 2024.

A research paper titled "ResNet1D-Based Personal Identification with Multi-Session Surface Electromyography for Electronic Health Record Integration" authored by Dr. Raghavendra Ganiga has been published in Sensors in May 2024.

A research paper titled "Applications, Challenges, and Future Directions of Human-in-the-Loop Learning" authored by Dr. Ritesh Sharma has been published in IEEE Access in May 2024.

MIT's Vision: Excellence in Technical Education through Research, Innovation and Teamwork.

MIT's Mission: Educate Students professionally to face societal challenges by providing a healthy learning environment grounded well in the principles of engineering, research, creativity and teamwork.

DEPARTMENT OF INFORMATION & COMMUNICATION TECHNOLOGY

Vision: Excellence in information and communication technology education and research through continuous learning and teamwork.

Mission: To facilitate learners to plan, design and develop information systems aiming at providing solutions for addressing societal requirements, and promoting quality education and research utilizing the expertise of industries, alumni and academia

B.TECH. IN INFORMATION TECHNOLOGY

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

PEO 1: Demonstrate technical competence to work in knowledge industry
PEO 2: Analyze, design, and provide professional solutions to societal needs
PEO 3: Pursue higher studies, research in emerging technologies, and demonstrate professional skills
PEO 4: Engage in life-long learning, acquire soft skills & leadership quality.
PEO 5: Demonstrate sensitivity towards ethics, society, environment and sustainability

PROGRAM OUTCOMES (POs)

PO 1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2: Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3: Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4: Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.
PO 6: The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO 7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12: Life-long learning: Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO 1: Identify, analyze and develop software systems using appropriate techniques and concepts related to information technology
PSO 2: Analyze and Design algorithms or methods to solve information technology domain problems using analytical, logical and problem-solving skills.
PSO 3: Develop information systems using state of the art IT tools and technologies.
PSO 4: Apply the principles of science, maths and computer programming to solve complex problems related to information technology.
PSO 5: Apply knowledge of programming, computational intelligence, computer graphics and visualization, data analytics, software system design, cyber security to arrive at solutions to real world problems.
PSO 6: Apply IT knowledge to design and develop systems with respect to societal, user, customer needs, health and safety, diversity, inclusion, societal, environmental codes of practice and industry standard.
PSO 7: Integrate and interface industry relevant hardware and software components and technology to come up with innovative and creative solutions.
PSO 8: Use of industry standard software tools and platform to design and analyze IT systems.
PSO 9: Learn to function collaboratively as a member of leader in diverse teams in multidisciplinary settings to manage the process effectively and document, present and communicate with the engineering community.

B.TECH. IN COMPUTER & COMMUNICATION ENGINEERING

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

PEO 1: Demonstrate technical competence in Computing and digital Communication
PEO 2: Formulate software solutions for network communication systems
PEO 3: Pursue higher studies, research and development in evolving technologies
PEO 4: Engage in life-long learning, acquire soft skills & leadership quality.
PEO 5: Demonstrate sensitivity towards ethics, society, environment and sustainability.

PROGRAM OUTCOMES (POs)

PO 1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2: Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3: Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4: Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.
PO 6: The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO 7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12: Life-long learning: Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO 1: Analyze and Design algorithms or methods to solve computer and communication engineering problems using analytical, logical and problem-solving skills.
PSO 2: Apply soft computing methods to solve communication engineering problems
PSO 3: Develop software for communication domain applying the knowledge of architecture, operating protocols, networks and software tools
PSO 4: Apply the principles of science, maths and computer programming to solve complex problems related to computer and communication technology.
PSO 5: Apply knowledge of programming, computational intelligence, computer graphics and visualization, data analytics, cyber security to arrive at solutions to real world problems.
PSO 6: Apply Computer and communication and IT knowledge to design and develop systems with respect to societal, user, customer needs, health and safety, diversity, inclusion, societal, environmental codes of practise and industry standard.
PSO 7: Integrate and interface industry relevant hardware and software components and technology to come up with innovative and creative solutions.
PSO 8: Use of industry standard software tools and platform to design and analyze computer and communication systems.
PSO 9: Learn to function collaboratively as a member of leader in diverse teams in multidisciplinary settings to manage the process effectively and document, present and communicate with the engineering community

M.TECH. IN COMPUTER NETWORKING & ENGINEERING

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

PEO 1: Demonstrate technical competence in Computer Network systems and applications
PEO 2: Formulate innovative and feasible software solutions for Network Communication systems
PEO 3: Pursue higher studies and contribute to research and development
PEO 4: Work collaboratively applying the domain knowledge in multi-disciplinary areas and exhibit professional ethics.

PROGRAM OUTCOMES (POs)

PO 1: Independently carry out research/investigation and development work to solve practical problems
PO 2: Write and present a substantial technical report/document
PO 3: Demonstrate a degree of mastery over the area as per the specialization of the program. The mastery should be at a level higher than the requirements in the appropriate bachelor program.

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO 1: Design network hardware architecture and software for wired and wireless communication networks
PSO 2: Model and Simulate engineering problems using soft computing technologies to analyze and demonstrate the performance
PSO 3: Apply concepts and processes to develop intelligent and secure systems.
PSO 4: Apply the principles of science, maths and programming to solve complex problems related to computer and networking technology.
PSO 5: Apply knowledge of programming, machine, deep, federated learning, information retrieval to arrive at solutions to real world problems.
PSO 6: Apply Computer Networking knowledge to design and develop systems with respect to societal, user, customer needs, health and safety, diversity, inclusion, societal, environmental codes of practise and industry standard.
PSO 7: Integrate and interface industry relevant hardware and software components and technology to come up with innovative and creative solutions.
PSO 8: Use of industry standard software tools and platform to design and analyze computer networking systems.
PSO 9: Learn to function collaboratively as a member of leader in diverse teams in multidisciplinary settings to manage the process effectively and document, present and communicate with the engineering community.

M.TECH. IN SOFTWARE ENGINEERING

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

PEO 1: Demonstrate technical competence in software system development.
PEO 2: Analyse and design software solutions for societal problems
PEO 3: Pursue higher studies and contribute to research and development.
PEO 4: Work Collaboratively in interdisciplinary projects and exhibit professional ethics

PROGRAM OUTCOMES (POs)

PO 1: Independently carry out research/investigation and development work to solve practical problems
PO 2: Write and present a substantial technical report/document
PO 3: Demonstrate a degree of mastery over the area as per the specialization of the program. The mastery should be at a level higher than the requirements in the appropriate bachelor program.

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO 1: Design software systems by applying software engineering principles and practices to provide solutions to complex engineering problems.
PSO 2: Model and Simulate engineering problems using soft computing technologies to analyze and demonstrate the performance
PSO 3: Apply concepts and processes to develop intelligent and secure systems.
PSO 4: Apply the principles of science, maths and programming to solve complex problems related to software engineering.
PSO 5: Apply knowledge of programming, full stack development, IoT, cloud and edge technology to arrive at solutions to real world problems.
PSO 6: Apply Software engineering knowledge to design and develop systems with respect to societal, user, customer needs, health and safety, diversity, inclusion, societal, environmental codes of practice and industry standard.
PSO 7: Integrate and interface industry relevant hardware and software components and technology to come up with innovative and creative solutions.
PSO 8: Use of industry standard software tools and platform to design and analyze software engineering problems.
PSO 9: Learn to function collaboratively as a member of leader in diverse teams in multidisciplinary settings to manage the process effectively and document, present and communicate with the engineering community.

M.TECH. IN MACHINE INTELLIGENCE & DECISION SCIENCE

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

PEO 1: Demonstrate technical competence in intelligent system development.
PEO 2: Analyse and design optimal intelligent solutions for societal problems
PEO 3: Collaborate in interdisciplinary projects and exhibit a high level of professional ethics.
PEO 4: Pursue lifelong learning in generating innovative engineering solutions using research and complex problem-solving skill

PROGRAM OUTCOMES (POs)

PO 1: Independently carry out research /investigation and development work to solve practical problems
PO 2: Write and present a substantial technical report/document
PO 3: Demonstrate a degree of mastery over the area as per the specialization of the program. The mastery should be at a level higher than the requirements in the appropriate bachelor program.

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO 1: Design intelligent systems by applying engineering principles and practices to provide solutions to complex engineering problems.- PSO 2: Provide automation/software solution for societal problems.
PSO 3: Ability to use the tools, and techniques for developing decisive, and intelligent solutions.
PSO 4: Apply the principles of science, maths and programming to solve complex problems related to machine intelligence and decision science.
PSO 5: Apply knowledge of programming, full stack development, federated learning, semantic web to arrive at solutions to real world problems.
PSO 6: Apply Machine intelligence and decision system knowledge to design and develop systems with respect to societal, user, customer needs, health and safety, diversity, inclusion, societal, environmental codes of practice and industry standard.
PSO 7: Integrate and interface industry relevant hardware and software components and technology to come up with innovative and creative solutions.
PSO 8: Use of industry standard software tools and platform to design and analyze machine intelligent and decision science problems.
PSO 9: Learn to function collaboratively as a member of leader in diverse teams in multidisciplinary settings to manage the process effectively and document, present and communicate with the engineering community.