Message from HOD

Dr. Ganga Prasad Pandey
Head of Department ECE

I hope this message finds you all in good health and high spirits. As we embark on another exciting academic year, I am thrilled to connect with you through our department newsletter, "ICTELLER 8.0." This platform allows us to share and celebrate our achievements in technology, innovation, and the growth of our department from January 2024 to May 2024.

The Department of ICT and ECE has consistently been at the forefront of cutting-edge research, transformative education, and collaborative initiatives. I congratulate our dedicated faculty and staff for their efforts in drafting new syllabi for both departments, which are now more aligned with industry demands and future technologies.

I am also immensely proud of our students for their achievements in the past semester. I wish them continued success and excellence in all aspects of their learning journey in the coming semester.

Message from HOD

Dr. Paawan Sharma
Head of Department, ICT

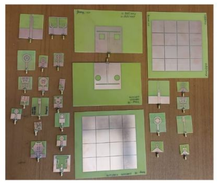
My heartfelt congratulations to the ICT Department's newsletter team for exceptional efforts and dedication. Your hard work and innovative approach has truly reflected through in this era of rapid advancements such as Artificial Intelligence (AI), Internet of things etc.

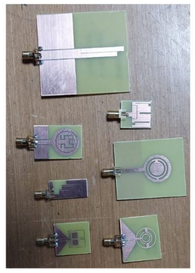
The newsletter is successful in capturing the latest developments, trends, and impacts of modern technology. In an era where AI is transforming industries and redefining the boundaries of what is possible, your contributions are more important than ever.

Once again, congratulations on a job well done. I am confident that your continued dedication will lead to even greater achievements in the future.

Department's Activities

Activity Description	Faculty Details	Type
ENTREPRENEURSHIP IN INDIAN SPACE TECH SECTOR by Gaurav Seth, Piersight	Dr. Kamal K. Garg, Dr. Manish Mandloi	Expert Lecture
Understanding CO-PO Mapping for Course File Preparation by Dr. Ravi Kant, Mechanical Engineering, PDEU	Dr. Manish Mandloi	Expert Lecture
Greedy Algorithms by Dr. Rahul Muthu, DAIICT	Dr. Kamal K. Garg, Dr. Deepak Sahu	Expert Lecture
Discrete Fourier Transform and its Applications by Dr. Naveen Gupta, BITS GOA	Dr. Abhishek Kumar, Dr. Ritesh Vyas, & Dr. Kamal K. Garg	Expert Lecture
NextGen Hearing Devices by Dr. Vinal Patel, IIITM, Gwalior	Dr. Manish Mandloi and Dr. Kamal K. Garg	Expert Lecture
SECURITY ASPECTS IN MOBILE SATELLITE COMMUNICATION INDUSTRY	Dr. Manish Mandloi and Dr. Kamal K. Garg	Expert Lecture
Two days Hands-On Workshop in Digital Design and Implementation using FPGA	Dr. Ankur Changela and Dr. Gunjan Thakur	Workshop
Radio Day Celebration on World Radio Day 13.02.2024	Dr. Devlina Adhikari, Dr.Deepak Sahu and Dr. Soumyashree Panda	Expert Lecture/ Seminar
"Introduction to Advanced FETs and 2D Materials based Devices" by Dr. Tarun Kumar Agarwal, IIT Gandhinagar	Dr. Manoj Yadav	Expert Lecture
Optimized Digital cross connect switch for SoC @FDP organised by Oxford College of Engineering, Bangalore, sponsored by IEEE, PDEU Gandhinagar	Dr. Gunjan Thakur	Expert Lecture
IGNITE: PhD Forum and poster presentations, IEEE SPS GS and IEEESPS PDEU SBC	Dr. Ritesh Vyas	Conference
Industry Academia Connect Program (IACP)	Dr.Santosh Satapathy, Dr.Ritesh Vyas, Dr.Soumyashree Panda	Seminar
Preplacement Preparation Event	Dr.Santosh Satapathy, Dr.Ritesh Vyas, Dr.Soumyashree Panda	Seminar
"555 timer and its industrial applications" by Mr. Kalpesh Doshi, IPR, Gandhinagar	Dr. Deepak Jarwal	Expert talk
Series of Expert Talks and Skill Development sessions on - "From Code to Control: Architecting Real-World Systems with Embedded C" by Dr. Prasiddh Trivedi, Gati Shakti VishwaVidyalaya	Dr. Parth S. Thakar, Dr. Amit M. Kumar	Expert Talks/ Skill Development sessions
"Embedded Systems" , by Dr. Kamal Kishor Jha	Dr. Amit M. Kumar, Dr. Parth S. Thakar	Expert Lecture
"Antenna measurements" by Dr. R. K. Malaviya, SAC-ISRO, Ahmedabad	Dr. Vivek Pandit	Expert Lecture
"Introduction of Cell Free Massive MIMO for 6G communication" at NIT Bhopal	Dr. Abhishek Kumar	Expert Talk





Radio Day celebration activity

Placements Highlights

NewsLetter Team

Dr. Abhishek Kumar
Faculty Advisor

Devang Rathod (ICT21)

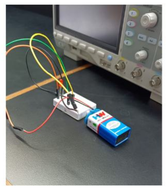
Suyash Gehlot (ICT21)

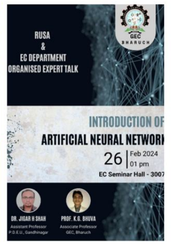
Aditi Kakadiya
ICT22

Harvi Bhanavadiya
ICT22

Tanay Shah
ICT22

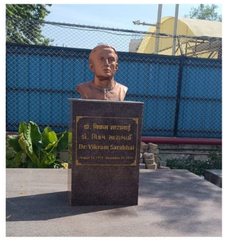
Scan and give your valuable Feedback.





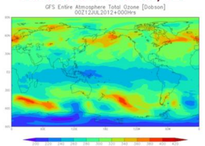
INDUSTRIAL VISITS

Place Visited	Faculty Involved	Visit Description
Institute of Plasma Research, Gandhinagar	Dr. Manish Kumar, Dr. Abhishek Kumar	Explore different application of plasma science and technology
SAC ISRO, Ahmedabad	Dr. Vivek Pandit, Dr. Abhishek Kumar, Dr. Ankur Changela Dr. Manish Kumar, Dr. Manish Mandaloi, Dr. Devlina Adhikari Dr. Abhishek Kumar, Dr. Amit M. Kumar, Dr. Amit G. Kumar	The visit to ISRO VSSE (Vikram Sarabhai Space Exhibition) in Ahmedabad Explored the realm of space exploration, showcasing India's prowess in the field of space technology. To learn about the ISRO, its achievements and to explore different satellites, rockets, and their components A comprehensive introduction to SAC as center of the ISRO,its multidisciplinary activities, and its contribution to national development
Adani Port, Mundra	Dr. Manish Kumar, Dr. Abhishek Kumar, Dr. Devlina Adhikari, Ms. Shivangi Mehta Dr. Santosh Kumar Satapathy, Dr. Ritesh Vyas, Dr. Gunjan Thakur, Mrs Punyata	Adani port was enriching Experience for students and not only supplemented classroom learning but also provided a holistic understanding of industrial operations and their implications.
Iolite Software Pvt. Ltd.	Dr. Ritesh Vyas	Establishment of internship opportunities for ICT students.
Capgemini,Gandhinagar	Dr. Ritesh Vyas, Dr.Santosh Kumar Satapathy	Research Internship visit under virtika scheme.
Centre of Excellence, NFSU	Dr. Ritesh Vyas, Dr.Santosh Kumar Satapathy	
Themis Automation, Ahmedabad	Dr. Parth S. Thakar, Dr. Amit M. Kumar	Establishment of Placement and Internship opportunities for ECE students, Company agreed for the same.
IIT Roorkee	Dr. Parth S. Thakar	Invited expert for Technical Meeting at Indo-French Seminar.



Invited Article: Heat waves & its adverse effect

Dr. Paawan Sharma
Associate Professor, ICT



Global temperatures have been rising steadily over the past century. Since the late 19th century, the average global surface temperature has increased by significant amount. With ever increasing global temperatures, the frequency and intensity of heatwaves are increasing, posing significant challenges to public health, infrastructure, agriculture, and the environment. Addressing these challenges requires innovative approaches that harness the power of Cyber-Physical Systems (CPS). These technologies are expected to offer solutions for mitigating the adverse impact of the changing climate.

Enhancing Data Collection and Analysis: Technology plays a crucial role in monitoring and managing the effects of heatwaves. Advanced sensors and IoT (Internet of Things) devices can be deployed across urban and rural areas to collect real-time data on temperature, humidity, and air quality. This data can then be transmitted to central repositories where analysis can be done specific machine learning algorithms. The insights gained from this analysis can inform policymakers and stakeholders about emerging heatwave patterns and their potential impacts.

For example, smart city initiatives can integrate digital devices to monitor urban heat pockets,which mainly occur due to urban constructions on a large scale. The data analysis can help city planners to identify hotspots and implement cooling strategies such as increasing green spaces, installing reflective roofing materials, and optimizing the placement of shade structures.

Integrating Physical and Digital Worlds: Cyber-Physical Systems (CPS) bridge the gap between the physical and digital worlds, providing a framework for automated an intelligent responses to heatwave conditions. CPS ensures an optimal combination of computational algorithms with physical processes through embedded systems and networks, allowing for diverse coverage.

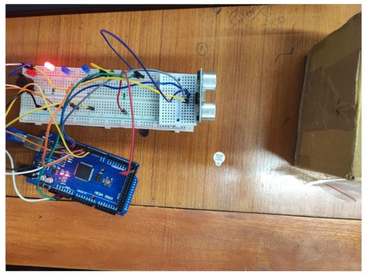
With agriculture sector as a major beneficiary, CPS can be used to optimize irrigation practices during heatwaves. Smart irrigation systems equipped with sensors and actuators can monitor soil moisture levels and temperature in real-time. In energy sector, smart grids can dynamically manage electricity distribution to prevent blackouts during periods of high energy demand caused by air conditioning usage. By proper placement, smart grids can balance supply and demand more efficiently, reducing the strain on power systems and ensuring a stable energy supply.

Additionally, the use of CPS in transportation systems can mitigate the impact of heatwaves on mobility. For example, smart traffic management systems can optimize traffic flow and reduce congestion, lowering the urban heat generated by vehicles.

Conclusion:

As we confront the challenges posed by increasing heatwaves in the coming era, the strategic deployment of CPS will be essential. These technologies offer innovative solutions for monitoring environmental conditions, optimizing resource use, and enhancing the resilience of infrastructure and communities. Some of the popular dataset details in this regard are mentioned below. The students and research community is highly motivated to kick-start with analysis of data of interest, and propose a multi facet solution.

1. Atmospheric, Climate Science and Services (ACROSS) Ministry of Earth Sciences (MoES) - Indian Climate Data.
2. National Data and Analytics Platform - NITI Aayog
3. Central Pollution Control Board (CPCB) Air Quality Data
4. National Remote Sensing Centre (NRSC) database.
5. WorldClim - Global Climate Data.
6. The Global Forecast System (GFS), NCEP weather forecast model.
7. Global Historical Climatology Network daily (GHCNd) dataset.



DEPARTMENT'S ACHIEVEMENTS

Vatsa Kala, Shreyasi Chudasama, Jay Bathiya, Dishika Jain, Pradip Kumar Barik, "Optimized 5G Resource Allocation for Metaverse Applications", IEEE ICECCC-2024 Conference, Bangalore, India (Presented).	A. Patel and A. G. Kumar, "Predicting Customer Churn In Telecom Industry: A Machine Learning Approach For Improving Customer Retention," 2023 IEEE 11th Region 10 Humanitarian Technology Conference (R10-HTC), Rajkot, India, 2023, pp. 558-561.
Garg, Kamal K., Parvez Shaik, Rachna Sharma, Peter Brida, Ondrej Krejcar, and Vimal Bhatia. "On the capacity of a SIM-based cooperative NLOS UVC system with best relay selection." ICT Express, Vol. 10, Issue 2, Apr-2024, pp. 285-291.	Dr. Deepak Kumar Jarwal appointed as an Editorial Board Member of Journal of Photonic Materials and Technology(JPMT), 2024.
P. Shaik, K. K. Garg, P. K. Singya, V. Bhatia, O. Krejcar and M. -S. Alouini, "On Performance of Integrated Satellite HAPS Ground Communication: Aerial IRS Node vs Terrestrial IRS Node", IEEE Open Journal of the Communications Society	Dr. Deepak Kumar Jarwal appointed as an Editorial Board Member of Journal of Electrical and Electronic Engineering (JEEE), 2024.
P. Shaik, C. Keçeci, K. K. Garg, A. Boyaci, M. Ismail and E. Serpedin, "Performance of Deep Learning Assisted Visible Light Communications Impaired by Blockages," GLOBECOM 2023 - 2023 IEEE Global Communications Conference, Kuala Lumpur, Malaysia, 2023, pp. 4704-4709	Amit Kumar and Deepak Jarwal "Efficient High-Gain Operational Amplifier Design for Σ-Δ ADCs in VLSI. In 2023 2nd International Conference on Futuristic Technologies" (INCOFT) (pp. 1-7), IEEE.
D. Kasundra, S. Chudasma, V. Kala, R. Vyas*, "Towards the Localization of Palm-Vein Regions from Hand Dorsal Images", In International Conference on Signal, Machines, Automation, and Algorithm: Proceedings of SIGMAA.	Deepak Kumar Jarwal, Rahul Kumar, Manjeet Kumar, and Anuradha Bera,"High Performance Photodetector with Improved Photoelectric Conversion using CsPbBr3 Perovskite single crystal" IEEE Sensor and Actuator: A Physical, 2024, (Accepted).
Dr. Ritesh Vyas received a grant of Rs. 1,50,000/- for research internship VRITIKA under the Accelerate-Vigyan scheme of Department of Science & Technology (DST).	Dr. Jigarkumar Shah , Drij Vaghasia , Tushar Vasuja , Richa Davda , Urvi Thanki, "Synergizing Factors and Fundamentals: A Systematic Approach to Robust Portfolio Construction", The International Conference on Applied Artificial Intelligence AICONF'24, UK, April 2024 (Presented)
Dr. Ritesh Vyas chaired a special session "Artificial Intelligence in renewable power systems" in the International Conference ICRP-2024 held during 28-29 March, 2024	Dr. Manoj Yadav, chaired a technical session in IETE SEMICON 55th MTS, 13-14th April 2024, PDEU Gandhinagar
Rachna Sharma, Yogesh N. Trivedi, and Kamal K. Garg "Performance analysis of rectangular quadrature amplitude modulation for multiple-input multiple-output dual- hop cooperative underwater visible light communication system," Optical Engineering 63(6), 066103 (28 June 2024).	Soham Prajapati, Parth S. Thakar*, Anilkumar Markana, "A new propulsion system GUI based control amenable model development for high-power rockets" , Advanced Control for Applications: Engineering and Industrial Systems, Wiley, 1-24, 2024
Dr. Kamal K. Garg, chaired a technical session in the 2024 Fourth International Conference on Advances in Electrical, Computing, Communications and Sustainable Technologies (ICAECT 2024), 11 - 12, January 2024.	Dr. Santosh Kumar Satapathy, chaired a technical session in 1st International Conference on Machine Intelligence, Tools, and Applications (ICMITA-2024) 12 – 13 April' 2024 at VIT Bhopal University, Bhopal-Indore Highway, Kothrikalan, Sehore, Madhya Pradesh - 466114, India.
A. Kothari, D. Adhikari, "Digital Twinning for Battery Systems: A Comprehensive Review," 1st International Symposium on Battery Technology: Advances and Future Trends, Gandhinagar, Gujarat, India, January 2024.	Dr. Kamal K. Garg, chaired a technical session in IEEE International Conference on Interdisciplinary Approaches in Technology and Management for Social Innovation (IATMSI-2024), 14-16 March 2024.
Title: Heart Rate and Blood Oxygen Saturation Measuring Eyeglasses, Application No: 202421010850, Patent Filing: 16/2/2024, Inventors: Dr. Devlina Adhikari, Darsh Gupta, Mohit Vazirani, Arushi Sharma, Aayushi Shah (Status: Filed).	Satapathy, S.K., Brahma, B., Panda, B. et al. Machine learning-empowered sleep staging classification using multi-modality signals. BMC Med Inform Decis Mak 24, 119 (2024). https://doi.org/10.1186/s12911-024-02522-2.
Dr. Amit G Kumar, has chaired 2 technical sessions in IEEE International Conference on Interdisciplinary Approaches in Technology and Management for Social Innovation (IATMSI-2024), 14-16 March 2024.	Santosh Kumar Tripathy, Roshan Singh, Rajeev Srivastava, Akash Kumar Bhoi, Santosh Kumar Satapathy,Advances in Human Activity Detection and Recognition (HADR) Systems,Synthesis Lectures on Computer Science,https://doi.org/10.1007/978-3-031-51660-3.
N. Soni, A. Kumar and H. Patel, "Acoustic Analysis of Cutting Tool Vibrations of Machines for Anomaly Detection and Predictive Maintenance," 2023 IEEE 11th Region 10 Humanitarian Technology Conference (R10-HTC), Rajkot, India, 2023, pp. 43-46.	SRP Project sanctioned under ECE department, Amount: INR 1,75,000: Students - SHAH DARSHIL NIMESHKUMAR, SHLOK GAURANG PANCHAL, KALASH JAIN, AMIT RAMRAKHYANI, BARBIE SHARMA, Mentors : Dr. Parth S. Thakar and Dr. Anilkumar Markana, Title of Project: Drone Suspended Cargo for Enhanced Aerial Operations.
Dr. Ritesh Vyas chaired a special session "Recent Trends in Deep Learning for Signal Processing" in the International Conference SIGMAA-2023.	Sharma, A., Dubey, C., Jarwal, D.K. and Rawat, G., 2023, December. Computational Approaches to Optimizing Perovskite Solar Cell Performance. In 2023 9th International Conference on Signal Processing and Communication(ICSC) (pp. 651-656). IEEE.