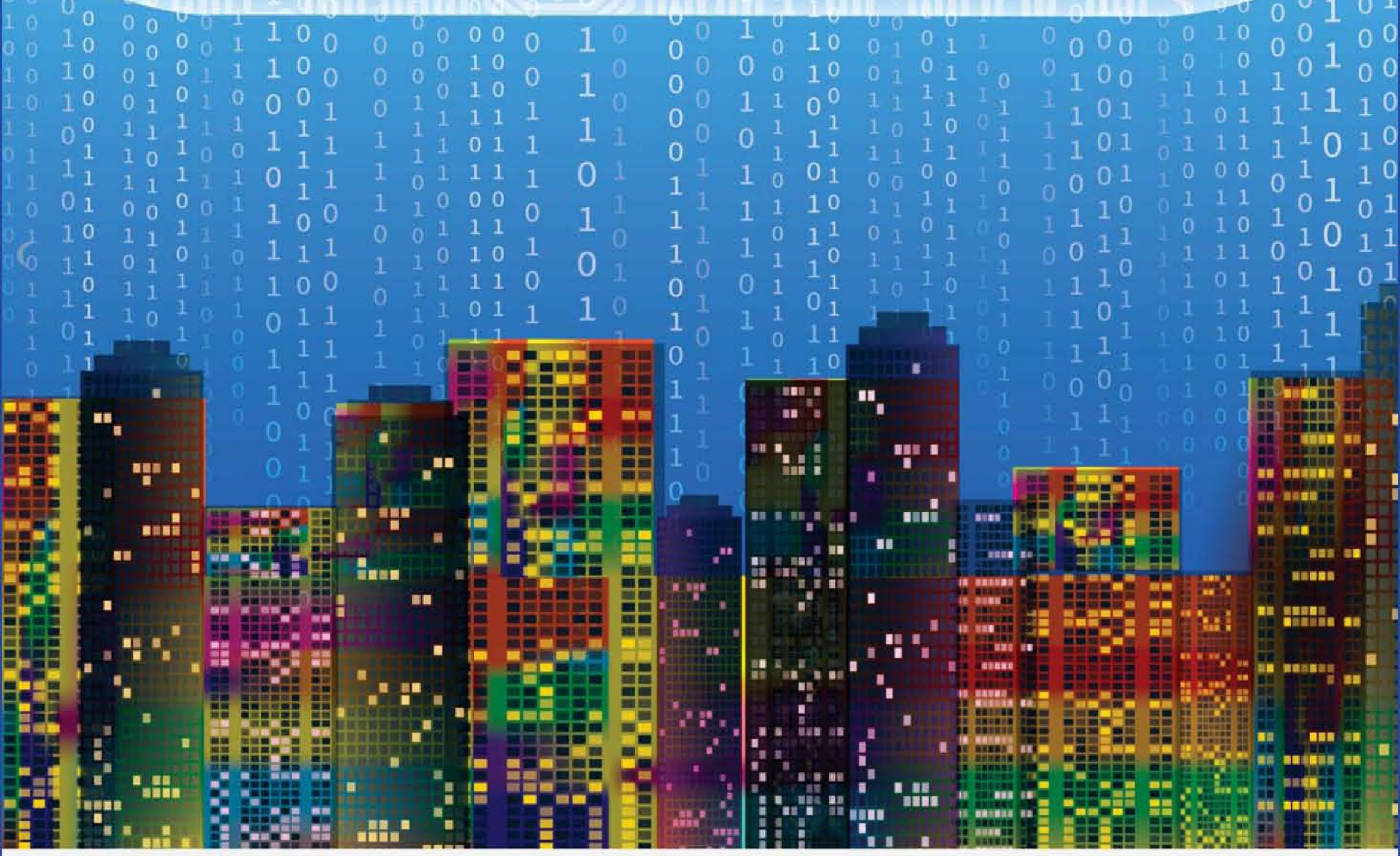
NIRMA UNIVERSITY
INSTITUTE OF TECHNOLOGY
NAAC ACCREDITED 'A' GRADE

ELECTRONICS AND COMMUNICATION STUDENTS' ORGANISATION

SPECTRUM

Issue 1 | July 2020



Department of Electronics and Communication Engineering
Institute of Technology, Nirma University
Ahmedabad 382 481

Vision of the Department

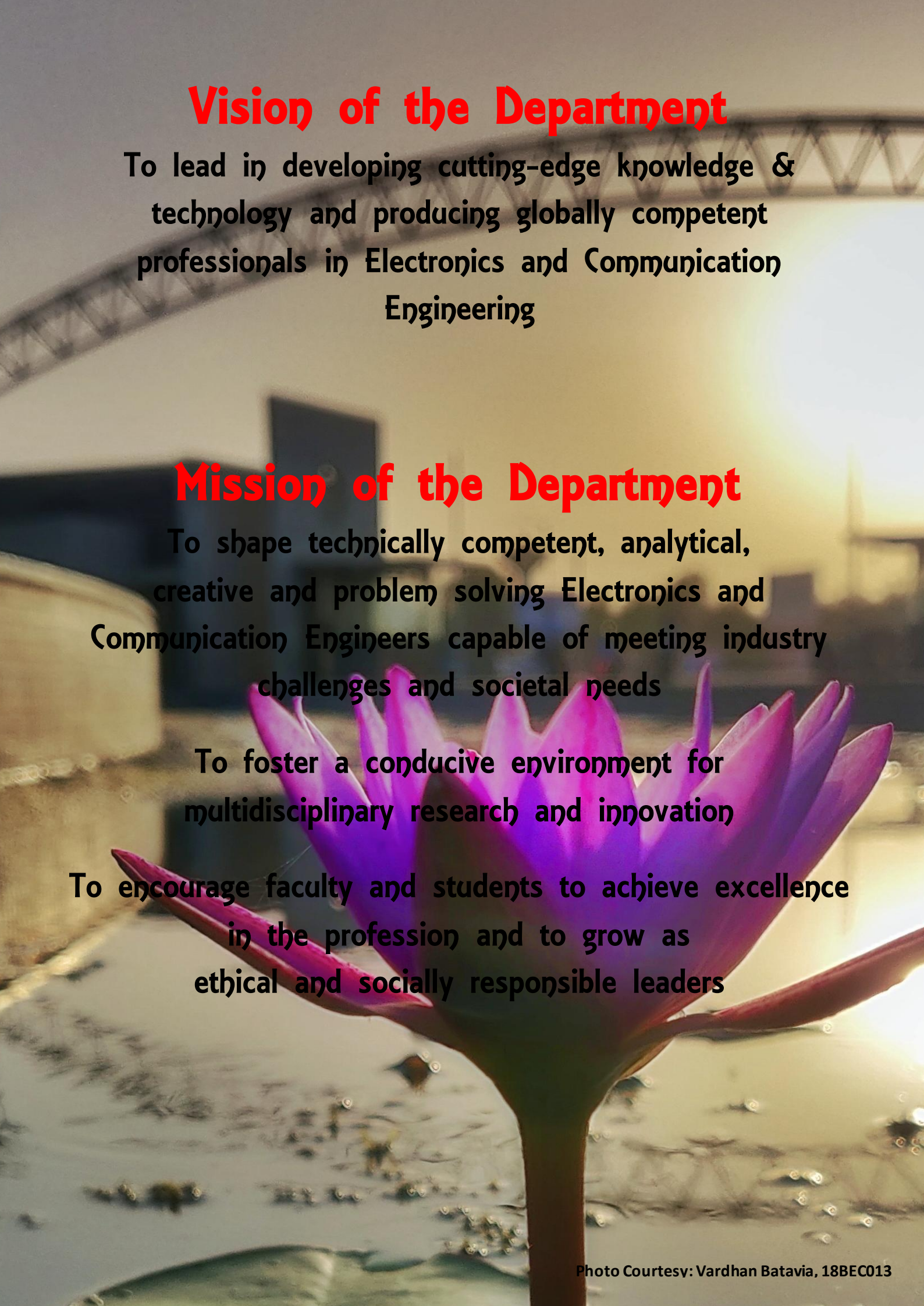
To lead in developing cutting-edge knowledge & technology and producing globally competent professionals in Electronics and Communication Engineering

Mission of the Department

To shape technically competent, analytical, creative and problem solving Electronics and Communication Engineers capable of meeting industry challenges and societal needs

To foster a conducive environment for multidisciplinary research and innovation

To encourage faculty and students to achieve excellence in the profession and to grow as ethical and socially responsible leaders



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Message from the Director General

In this globalised world, creativity and innovation have a distinct reputation. A non-creative professional cannot thrive in the modern industrial setup, as compared to the one with greater creativity and innovation with the technical knowhow. In the age of Information and Communication Technology, people are highly connected and networked. Nirma University, Ahmedabad maintains relationships with all stakeholders and continuously strengthens them.

A department magazine is an appropriate platform that provides an opportunity for the students, faculty, and the alumni of the department to showcase their creativity and innovation, contributions, and connections. I am pleased to note that the Department of Electronics and Communication Engineering, Institute of Technology has taken a step forward and has come up with an e-magazine that covers the various activities and achievements of the students, faculty, and alumni. I congratulate the department and all the stakeholders for their enthusiasm and commitment.

The e-magazine 'SPECTRUM' signifies a band of colours, produced by the separation of the components of light by their wavelength. The magazine certainly covers various colours of an engineering life with a variety of potential of individuals from the department. The articles by the faculty, alumni and students, creative paintings, poetry, etc. display the involvement of all the stakeholders in the betterment of the department. The research outcomes, consultancy, and MoUs demonstrate the strength of the department in the technical horizons as well. Various activities by the department and the students' clubs are the indicators of the active engagement of the students and faculty towards excellence.

I once again congratulate the team 'SPECTRUM 'for coming up with a department magazine to demonstrate their technical and non-technical calibre and competence. I wish them good luck in their future endeavour in further strengthening the department.

Dr Anup K Singh

Director General,

Nirma University, Ahemedabad, 382481

Message from the Director

In the era of globalization and technological advancement, it is indispensable for an Engineering Institution to stand apart in terms of research and innovations. The student community is an integral part of the education system. As a pioneer institution in engineering, it is our moral duty to provide a platform to the students for showcasing their research, innovations, talents, and achievements. The department magazine is certainly a great platform for students to bring out their hidden talents. I congratulate the Department of Electronics and Communication Engineering and the Electronics and Communication Students' Organization (ECO) for coming up with a Department Newsletter.

This newsletter will provide the students with an opportunity to interact with their faculty members beyond the four walls of classrooms. The newsletter will serve as a medium for the students and faculty members to share their achievements. The testimonies of the alumni members will motivate the present batch students for setting a new goal for their future careers. The articles on recent trends and technological advancements will open the new learning prospects for the students and will undeniably encourage them to actively involved in future innovations to the current societal problems. I believe, this newsletter will help the department to approach industries to collaborate with them in terms of engineering education, research, and innovations. In turn, the strong industry liaison will enhance the growth of students, faculty members, department, and conclusively the institute.

I once again congratulate the department faculty, students, and all the contributors to the magazine. I wish that this best practice of publishing the Department Newsletter at a regular interval continues in the future also.

Dr R N Patel
Director, Institute of Technology, Nirma University,
Ahmedabad, 382 481

Preface

Knowledge sharing and information exchange are contributing factors to the growth of society. Sharing of knowledge is a way to build up new knowledge and add to the intellectual property of the organization. At the same time, conveying information, ideas, achievements, help the individuals as well as the organization to serve better to the stakeholders. With these thoughts, we decided to publish the Department Newsletter cum Student Magazine – SPECTRUM.

It gives me immense pleasure to put forward the first issue of the e-magazine of the Department of Electronics and Communication Engineering, Institute of Technology, Nirma University. This e-magazine will serve multiple objectives of bringing the hidden talent of the students and at the same time a mechanism to share the achievements and news items to the external world.

This issue covers the articles on recent advancements, experience sharing, information about the useful resources, and other interesting material for the readers. Also, it includes the achievements of the students, news items, and reports of the different events organized by the Department, new initiatives, etc. for the duration of January 01 to June 30, 2020.

Before summing up, I sincerely thank the University Management, the Director-Institute of Technology, all faculty members, students, and alumni for their support and necessary guidance at different stages. I appreciate the efforts of all the Office Bearers of our student body - the Electronics and Communication Students' Organization (ECO), the designers, and all contributors to this e-magazine. My special thanks to all the alumni who helped by way of submitting their articles, testimonies, and constructive suggestions.

I hope that this e-magazine will become the reflection of the department and a platform for the students to express their creativity.

We will be glad to receive constructive suggestions and feedback from all the readers to improve the quality of future editions.

Dr. Dhaval Pujara,
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Institute of Technology, Nirma University, Ahmedabad 382 481
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The Team ECO

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Dr. Akash Mecwan

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Risha Singh

Ayushee Samridhi

Anandi Parghi

Abhishek Rakholia

Bhavin Patel

Devang Sharma

Dhruv Shah

Priyam Patel

Ramika Chakhaiyar

Rehan Shaikh

Rishabh Sharma

Goradiya Vastal

Surbhi Tripathi

Yash Patel

A Lost Gem – Dr Tanish Zaveri

A gem lost forever,
A star shattered,
A flame turned-off.

6th July 2020, not only did the Department of Electronics and Communication Engineering lost one of its prime members, but the whole Electronics Engineering Community lost a treasured jewel. And such was the grave adversity due to this loss, that along with our wet eyes, the whole sky too cried and drenched the city wet. It rained the whole morning as if the Heavens above too were deeply saddened by this loss, the untimely demise of our beloved Dr Tanish Zaveri.

We called him fondly as Zaveri Sir and knew him more due to his charismatic personality, his energy and warmth, patience and calmness, and his zest to teach. Picturing him was easy as a smile never left his face and he was always available to lend a helping hand, guidance, and support to his peers, students, and anyone who came around.

To the whole world, he was an expert in Image Processing, but to us, he was a Professor who taught courses like Signals and Systems, Digital Signal Processing, Image Processing, etc. making every concept so lucid and easy for the students to grasp and understand. He had dedicated more than twenty years in the teaching field.

Prof Zaveri was a graduate in EC from Sardar Vallabhbhai Regional College of Engineering, Surat, 1998 and he obtained his MTech degree in Biomedical Engineering from the Indian Institute of Technology, Bombay in 2005. He completed his PhD in Computer Engineering from Sardar Vallabhbhai National Institute of Technology, Surat in the year 2010.

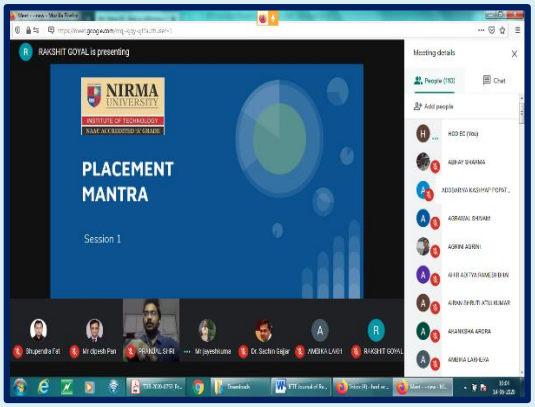
His contributions to the department, University, and the research community as a whole could never be forgotten. With several conference and journal papers in the area of Image Fusion, Microscopic Imaging, Content-based Image Retrieval, Blind Image Deburring, Hyperspectral Imaging, Human Activity Recognition, etc., he has immensely contributed to the Image Processing community. Not only this, but he has guided more than ten PG dissertations, five PhD thesis.

A favourite among students, while choosing their BTech projects, Dr Tanish Zaveri had spearheaded and completed several research projects from ISRO and Gujarat Council Of Science and Technology (GUJCOST).

Words fall short while expressing the service and contributions of Dr Zaveri, may it be in academics or research. It's a void, that won't be filled. A loss that would never be compensated, but our hearts go out while reminiscing this unforgettable personality – Dr Tanish Zaveri (1974-2020), Professor, Department of Electronics and Communication Engineering, Institute of Technology, Nirma University.

Activities at the Department

A Webinar Series-Placement Mantras by Seniors



The Department of Electronics & Communication Engineering organised a webinar series on "Placement Mantra by Seniors". The first session of the webinar series was held on June 14, 2020 on Google Meet for the B Tech EC, Semester V and VII students, in which approximately 140 students and faculty members participated. Two alumni members – Mr Rakshit Goyal and Mr Pranjal Shrivastava interacted with the students. Mr Rakshit and Mr Pranjal presented the details for the placement process where they discussed general awareness about placement, guidance for preparation, effective utilization of time, designing resumes, interview tips, etc.

The second session of the webinar series was organized on June 20, 2020from 6:30 pm to 8:00 pm on Google Meet. Three alumni members - Mr. Rakshit Goyal, Mr. Pranjal Shrivastava, and Mr. Jaivik Desai have conducted the session. Approximately 130 students and faculty members have participated in this webinar. The alumni students discussed the importance of programming languages to secure the job placement. Mr. Pranjal and Mr. Javik discussed the insight into the preparation of C and C++ languages. They advised the students to write codes without using inbuilt functions. Mr. Rakshit shared knowledge of the scripting language-Python. He shared the required concepts of Object-Oriented Programming (OOP), database, and other important modules related to Python.

The third session of the webinar series was held on June 21, 2020 from 10:00 am to 11:15 am on Google Meet. The topic of discussion was 'VLSI Design'. Six alumni members – Mr Rakshit Goyal, Mr Pranjal Shrivastava, Ms Vinita Ramnani, Ms Jaya Thadani, Ms Vidhi Shah and Mr Prakhar Suneja conducted the session. More than 120 students and faculty members participated in this webinar. The alumni students have discussed the importance of the VLSI Design domain for job placement. Each speaker spoke on different sub-domains of VLSI Design. Mr Rakshit and Ms Jaya discussed the basics of VLSI Design and Design for Testability. Ms Vinita Ramnani and Mr Prakhar Suneja nicely explained the significance and role of system Verilog in the EC field. The concept of Testing and Verification was discussed by Ms Vidhi and supported by other alumni members. The presenters have guided the participants for the Job Interview Preparation and also shared important resources.

Two-Day Workshop on "RISC-V Boot Camp"

A two-day workshop on 'RISC-V Boot Camp' was organised by the Department of Electronics and Communication Engineering jointly with SiFive during March 2-3, 2020. The workshop was conducted by SiFive officials and coordinated by Prof (Dr) Usha Mehta, Professor, Department of Electronics and Communication Engineering,

Institute of Technology. SiFive is the first fabless semiconductor company to build customised silicon based on the free and open RISC-V instruction set architecture. The workshop was aimed at the faculty members, research scholars, Industries, and R&D personals. It included key concepts of the open RISC-V instruction set architecture and hands-on FPGA development board. More than 150 participants have attended this workshop.

Two-Day National Seminar on '5G Wireless Technology'

The Department of Electronics and Communication Engineering organised a two-day national seminar on February 14-15, 2020. The seminar was coordinated by Prof (Dr) Y N Trivedi, Professor, Department of Electronics and Communication Engineering, Institute of Technology. The seminar was designed for faculty members, research scholars, and R&D personals. The seminar was inaugurated by renowned professor and academician, Dr Ajit Kumar Chaturvedi, Director, Indian Institute of Technology, Roorkee. Prof S S Das from IIT-Kharagpur delivered a lecture on, 'Evolution of Air Interface towards 5G'. Dr Sendil Kumar, General Manager-Standardization, Ericsson, Gurgaon delivered a lecture on '5G IMT 2020 Technology and Spectrum'. Mr Devadasa Pai, Manager, NanoCell Networks Pvt Ltd, Bangalore delivered an interesting talk on, '5G Radio Access Network (RAN)' and Ms Soundarya Venkatesan of Altair demonstrated the software 'WinProp' for the propagation analysis and radio channel planning of 5G. On the second day of the programme, Mr Ashutosh Agrawal, Manager, Qualcomm, Bangalore delivered a lecture on, 'Making 5G NR mm-wave a Commercial Reality'. Mr Rajul from Arastu System, Ahmedabad delivered a lecture on, 'Condition-based Monitoring System using IoT'. Mr Niraj Nanavati of Nokia, Bangalore delivered a talk on, 'Demystifying, Standardizing and Deep-Diving 5G'. Mr Nikhil Mitaliya, Field Application Engineer, Tektronix India Pvt Ltd delivered a lecture on, 'Six Key Challenges of the Internet of Things'. Mr Uvraj Natrajan, Senior Application Engineer, Mathworks, Bangalore delivered a lecture on, 'Implementation of 5G with MATLAB'.

Introduction to Machine Learning using MATLAB

A webinar on "Introduction to Machine Learning using MATLAB" was organized on June 24-26, 2020. The webinar was coordinated by Dr. Nagendra P. Gajjar and Dr. Ruchi Gajjar from the Department of Electronics and Communication Engineering. Both the coordinators were resource persons along with Mr. Viral Shah, an Alumni of EC and also an Engineer at the Machine Learning Group, elnfochips, Ahmedabad.

The objective of the webinar was to spread awareness about Machine Learning among the students of Technology and Engineering. Another objective was to make the students understand the basics of Machine Learning and Deep Learning fundamentals. Importantly, the sessions were conducted interactively for hands-on with MATLAB Software through the use of a University-wide MATLAB license. The registration of the webinar was open for all branches on Technology and Engineering starting for UG, PG and PhD program students of ITNU. Total 590 students had registered for the webinar. Finally, 300 participants completed the webinar with the requirements of attendance, continuous evaluation through Quizzes and Assignments. The Sessions were conducted through Google Meet online platform, in three parallel meets. The Registration, Quizzes and feedback were taken and evaluated through Google forms. The content covered in the webinar was as follows:

1. Machine Learning (ML) using MATLAB: Basics, Processes and Example with demo
2. Deep Learning (DL) using MATLAB: Basics, Processes and Example with demo
3. Applications and Case Studies of ML and DL

Meeting of EC Faculty with Alumni Serving at SAC-ISRO

The Faculty members of the Department of Electronics & Communication Engineering had a meeting with their alumni presently working in Space Applications Centre-ISRO, Ahmedabad on January 07, 2020, at the SAC-Ahmedabad campus. The meeting was attended by six senior faculty members of the EC department and thirteen scientists of SAC-ISRO. The agenda of the meeting was to explore the possibility of involving the alumni in academic-related activities of the EC department and get the benefits of their expertise. Dr Dhaval Pujara briefed the gathering outlining the purpose of the meeting and the expectations from the alumni. Dr D K Kothari presented the details of the scheme of BTech EC Semester V, VI, VII, and VIII syllabus and invited suggestions. Many valuable suggestions on the curriculum and other aspects of teaching-learning were received.

Orientation Programme for the Students

The Department of Electronics and Communication Engineering organised one-day Orientation Programme for the students of BTech, Semester IV, and VII students (2020 Batch) on January 2, 2020. Dr Dhaval Pujara, Head of the Department, briefed the students about the programme, objectives, and expected outcomes.

The first session was delivered by Shri Dharmendra Sharma, Director-Technical, Gujarat Fiber Grid Network Limited. Shri Sharma gave a talk on 'Positive Attitude and Digital Revolution in Rural Gujarat'. He shared his experience

of connecting 250,000 Gram Panchayats in the country, covering nearly 625,000 villages to improve telecommunication in India and to reach the campaign goal of 'Digital India'. He discussed the challenges and hurdles faced in implementation and motivated the students to come out with appropriate solutions for these problems.

The second session was by Sadhu Shri Vivekjivandas Ji, Editor, English Magazine, BAPS, Shahibaug. He gave a talk on 'Managing Life' and discussed the important pillars for managing life, i.e. managing self, managing others, managing time, and managing work. He stressed upon conspicuous consumption, i.e. not to use anything if it is not needed and asked the students to imbibe honesty, integrity, humility, and morality in life. After the two sessions, the students were divided into four groups consisting of fourth and Sixth-semester students. Four faculty members were assigned to each class, where the students were engaged in group activities, active learning, and discussions to build the rapport between both the semesters. The idea was to increase knowledge sharing and bring out more collaborative projects between them in the future.

Two sessions were held post-lunch break. The first session was by an alumnus of EC, Mr Jonti Talukdar who is currently pursuing his Masters at Duke University, USA. He addressed the students on 'Pathway to Post-Graduate Opportunities Abroad'. He shared his experience of studying abroad, preparations required, the concept of the academic journey, and how to utilize the opportunities available at Nirma to shape their academic journey and reach the desired goal.

The last session was by Dr Parth Vaishnav, Consultant Psychiatrist & Deaddiction Expert, Samvedna Happiness Hospital, Ahmedabad. The topic of his talk was 'Do We Need to Talk about Addictions'? He discussed some important and serious issues related to addiction, covering addiction to social media, cell phones, increasing issues of drugs. He explained the effects of such dreadful consumptions, made the students understand the consequences, and encouraged them to spread awareness in this regard.

All the sessions were very well received by the students. They appreciated the knowledge and information gained from all the speakers as well as the interactions in the class activity.

Department Contribution to Research and Innovation

Publications by the Faculty Members

(From January 01 to June 30, 2020)

Rutul Patel, Vishvjit Thakar, and Rutvij Joshi, "Single Image Super-Resolution through Sparse Representation via Coupled Dictionary learning", International Journal of Electronics and Telecommunications, vol. 66, no. 2, pp. 347-353, June 2020.

Jayesh Patel, Amisha Naik. "Design for Improving Non-Linearity Error of Current Steering DAC for Biomedical Applications". International Journal of Advanced Science and Technology, vol. 29, issue. 9S, pp. 2434-2440, May 2020.

Tanuj Gupta, Chetna C Chauhan, Amrin R Kagdi, Sher Singh Meena, Rajshree B Jotania, Charanjeet Singh and CB Basak, "Investigation on structural, hysteresis, Mössbauer properties and electrical parameters of lightly Erbium substituted X-type Ba2Co2ErxFe28-x046 hexaferrites", Ceramics International, vol. 46, pp. 8209-8226, April 2020.

Jayesh Patel, Amisha Naik. "Comparative Study of Current steering DAC based on Implementation using various types of Switches" International Journal of Advanced Research in Engineering and Technology, vol. 11, issue 4, pp.491-499, April 2020.

Piyush Bhatasana, "Timing Closure of Memory Partitions for a Lower Nodes Technologies", International Journal of Recent Technology and Engineering (IJRTE), 8(6), 5322-5325, April 2020

Sagar B. Patel, Jaymin K. Bhalani, Y. N. Trivedi "Performance Of Full Rate Non-Orthogonal STBC in Spatially Correlated MIMO Systems" Radioelectronics and Communications Systems Springer Link, Vol. 63, No. 2, March 2020.

Jayesh Patel, Amisha Naik. "A Low Voltage High-Speed Segmented Current Steering DAC for Neural Stimulation Application". International Journal of Recent Technology and Engineering, vol. 8, issue 5, pp.4270-4274, January 2020.

Dharmendra V. Chauhan, Jaymin K. Bhalani, Y. N. Trivedi "Improvement of symbol error rate performance in spatial multiplexing systems using transmit antenna selection", Radioelectronics and Communications Systems Springer Link, Vol. 62, No. 12, pp.642-648, December 2019.

Trivedi Pratik, and Zaveri Tanish. "Efficient Rotator Design for Sinusoidal Transforms." International Journal of Advanced Research in Engineering and Technology (IJARET) 10, no. 6, December 2019.

Trivedi Pratik, and Zaveri Tanish. "Improved Multiple Trajectories Rotator Design for Transforms." International Journal of Advanced Research in Engineering and Technology (IJARET) 10, no. 6, December 2019.

Nikunj Joshi, Deepak Upadhyay, Ankur Pandya, Prafulla K Jha: Predicting the stable rhodium based chalcopyrites with remarkable optical properties; Journal of Applied Physics, 126, (23) 235705, December 2019.

Amisha Naik, Nilesh Patel, a Low Jitter Low Phase Noise Wideband Digital Phase Lock Loop in Nanometer CMOS Technology, International Journal of Recent Technology and Engineering, Nov-2019,

Dharam Shah, Tanish Zaveri, "Hyperspectral Subspace Identification Using Eigen Values," Journal of Geomatics, Vol.13, No.2, October 2019.

Vaishali Dhare, Usha Mehta, "Test Pattern Generator for MV based QCA Combinational Circuit targeting MMC Fault Models", IETE Journal of Research, vol. 65 (1), pp. 1-11, October 2019.

Mecwan Akash, and N. M. Devashrayee. "High Performance Low Noise Amplifier for Operations in Lower ISM Band." Journal of Electrical and Electronics Engineering, Vol. 12, No. 2, pp. 59-64, October 2019.

Deepak Mandge and Nagendra Gajjar, "Design and Development of Wireless Control System Architecture for ITER-India Gyrotron Test Facility International Journal of Sensors Wireless Communications and Control, vol.9, no.3, pp. 345-356, September 2019.

Fataniya Bhupendra, Aayush Sood, Deepti Poddar, and Dhaval Shah, "Implementation of IoT Based Waste Segregation and Collection System", International Journal of Electronics and Telecommunications, Vol.65, Issue 4, pp.579-584, September 2019.

Vijay Savani, Akash Mecwan, Jayesh Patel, and Piyush Bhatasana, "Design and Development of Cost-effective Automatic Fertilization System for Small Scale Indian Farm", International Journal of Electronics and Telecommunications, vol. 65, pp. 353-358, August 2019.

Shah, Dharambhai, and Tanish Zaveri. "Energy based convex set hyperspectral endmember extraction algorithm." International Conference on Computer Vision and Image Processing. Springer, 2019.

Dhare V. H. and Mehta U. S. "Implementation and defect analysis of QCA based reversible combinational circuit", 7th Nirma University Conference on Engineering, 2019.

Shah, Dharambhai, and Tanish Zaveri. "Hyperspectral endmember extraction algorithm using spearman's rank correlation", International Conference on Communication & Computational Technologies, 2019.

Rutul Patel, "Image super-resolution through quick learning from self-examples", 7th Nirma University Conference on Engineering, 2019.

Shah, Dharambhai, and Tanish Zaveri. "Hyperspectral endmember extraction algorithm using convex geometry and K-means", 3rd International Conference on Emerging Technology Trends in Electronics Communication and Networking, 2019.

Singh Mangal et al., "Hybrid CR network: an approach based on interweave and underlay type CR network", Springer International Conference on Electronic Systems and Intelligent Computing, 2019.

Sharma Rachna and Trivedi Yogesh "Impact of imperfect csi on the performance of inhomogeneous underwater vlc system", International Conference on Paradigms of Computing, Communication And Data Sciences, 2019.

Paramar H. K and Mehta U. S. "Test time reduction using power aware dynamic clock allocation to scan vectors", International Conference on Advances in VLSI and Embedded System, 2019.

Upadhyay, Dhaval J., Y. N. Trivedi, and Subhash Chandra Bera. "Performance of SIMO system under time varying wireless channel using partial CSI." 2019 10th International Conference on Computing, Communication and Networking Technologies (ICCCNT). IEEE, 2019.

Shah, Dharambhai, and Tanish Zaveri. "Hyperspectral endmember extraction using band quality." 2019 IEEE 16th India Council International Conference (INDICON). IEEE, 2019.

Shah, Dharambhai, and Tanish Zaveri. "A novel geo-stat endmember extraction algorithm." TENCON 2019-2019 IEEE Region 10 Conference (TENCON). IEEE, 2019.

Shah, Dharambhai, and Tanish Zaveri. "Fast hyperspectral subspace identification using eigenvalue based energy thresholding." 2019 4th International Conference on Information Systems and Computer Networks (ISCON). IEEE, 2019.

Shah, Dharambhai, Madhumita Tripathy, and Tanish Zaveri. "Comparison of target detection techniques for hyperspectral images." 2019 4th International Conference on Information Systems and Computer Networks (ISCON). IEEE, 2019.

Chauhan Chetna., et al. "Investigation of structural and microstructural properties of hematite synthesized in the presence of oleic acid." AIP Conference Proceedings. Vol. 2220. No. 1. AIP Publishing LLC, 2020.

Panchal Dipesh and Naik Amisha "0.25V bulk driven variable gain amplifier using gmb/idrain method for ultra-low power low voltage biomedical applications" 5th International Conference on Communication and Electronics Systems, 2020.

Khusbu Sinha and Yogesh Trivedi "Cooperative spectrum sensing with improved absolute value cumulation detection based on additive laplacian noise in cognitive radio", International Conference on Electronic Systems And Intelligent Computing, 2020,

Publications/Presentations by the Students

(During January 01 to June 30, 2020)

Jobanputra Ami, Panchal Dhruv and Kakani Bhavin, "Development of Antennas Subsystem for Indian Air Borne Cruise Missile", International Conference on Paradigms of Computing, Communication and Data Sciences, May 2020.

Soni Riddhi, Gajjar Sachin, Fataniya Bhupendra and Upadhyay Manisha, "Software Tools for Global Navigation Satellite System", 4th International Conference on ICT on Intelligent Systems. May 2020.

Chaudhari Shital, Bhowmik Preeti and Gajjar Sachin, "Detection of Cardio Vascular Disease using Fuzzy Logic", 4th International Conference on ICT on Intelligent Systems. May 2020.

Bhupendra Fataniya, Aayush Sood, Deepti Poddar, Dhaval Shah, "Implementation of IoT based Waste

Segregation and Collection System." International Journal of Electronics and Telecommunications, 65 (4), (2019), pp 579—584.

Divyanshu Tak, Paras Savnani, Ayush Jain and Akash Mecwan, "Modelling, Design and Control of a Four-wheel Holonomic Drive, 7th International Conference on Signal Processing and Integrated Networks, February 2020.

Trivedi Jay, Yash Shamnani and Ruchi Gajjar, "Plant Leaf Disease Detection Using Machine Learning", 3rd International Conference on Emerging Technology Trends in Electronics Communication and Networking, February 2020.

Paras Shavnani, Ayush Jain, Divaynshu Tak, Akash Mecwan, "Path Tracing in Holonomic Drive System with Reduced Overshoot using Rotary Encoders", 7th International Conference on Signal Processing and Integrated Networks, February 2020.

Mathur Dhruv, Seth Sarthak, "Performance Characterization of Equalization Techniques in MIMO System under Co-channel Interference and Spatial

Correlation" International Conference on Cloud Computing, Data Science & Engineering, January 2020.

Ruchi Gajjar, Tanish Zaveri, Aastha Vaniawala, "Estimation of Defocus Blur Radius using Convolutional Neural Network" 7th Nirma University International Conference on Engineering, November 2019.

Vaishali Dhare, Deeksha Agarwal, "Implementation and Defect Analysis of QCA Based Reversible Combinational Circuit", 7th Nirma University International Conference on Engineering, November 2019.

Nitesh Kalawani, Punit Malpani, Sachin Gajjar, "Design, Development and Testing of SmaTra: A Smart Traffic Light Control System", 7th Nirma University International Conference on Engineering (NUiCONE) 2019.

Dhwani Desai, Abhishek Soni, Dhruv Panchal, Sachin Gajjar, "Design, Development, and Testing of Automatic Pothole Detection and Alert System", 16th IEEE India Council International Conference (INDICON) 2019.

Pranjal Shriwastva, Aditi Bhatanagar, Jaivik Desai, Sachin Gajjar, "DDAS: Distributed Data Acquisition System using Wireless Sensor Networks", 16th IEEE India Council International Conference (INDICON) 2019.

PhD Completed

Title of Thesis: Bandwidth Enhancement of Dielectric Resonator Antennas using Stacked and Fractal Geometries

Kedar Trivedi (15EXTPHDE152)

ABSTRACT: In recent times, the Dielectric Resonator Antennas (DRAs) have shown great potential as an alternative to microstrip patch antennas in various practical applications. Their inherent properties like wide bandwidth (BW), high gain, low losses, high mechanical strength, high power handling capacity, three degrees of freedom, compatibility with diverse feeding techniques, and many more make DRAs the preferred choice over microstrip antennas. Various techniques have been employed by the researchers for bandwidth improvement of Dielectric Resonator Antennas. This thesis focusses on the concept of using fractal geometry, stacking, and a hybrid of fractal geometry and stacking for achieving wide bandwidth. Various novel DRA designs with wideband and ultrawideband (UWB) performance have been proposed. The proposed antennas have been analysed using a FEM-based EM simulator Ansys HFSS. The prototypes have been fabricated and their results compared with simulated results to validate the designs. Further, it was found that very little work had been carried out in the field of mutual coupling isolation in ultra-wideband DRA array. Using novel Defected Ground Structures (DGS), a reduction in mutual coupling in different DRA array designs has been achieved.

In the first approach to enhance the bandwidth of DRAs, two novel fractal-based DRA designs have been proposed. The use of fractal geometry also offers the benefit of antenna miniaturisation. The first design is a Triangular Prism-shaped DRA with Sierpinski Gasket fractal geometry. An impedance bandwidth of 72.3% has been achieved in this prototype. Secondly, the design of the innovative Surya Yantra-shaped fractal UWB DRA has been proposed. Measured impedance bandwidth of 113.3% covering the frequency range from 2.6 to 9.4 GHz has been achieved.

In the second approach, two novel DRA designs based on the concept of stacking have been proposed. Apart from bandwidth improvement this approach also provides the benefit of high gain. Stacked T- and Z-shaped DRA designs have been proposed. Measured impedance bandwidth of 110.5% in stacked T-shaped DRA, and 114.5% in case of stacked Z-shaped DRA has been achieved. The simulated results of both the antennas have been validated.

In the third approach, two novel DRA designs using a hybrid configuration based on the combined concept of fractal geometry and stacking have been proposed. This approach helps in achieving all three benefits of wide bandwidth, high gain, and antenna miniaturisation. Stacked fractal Maltese Cross and Triangular Prism-shaped DRA designs have been proposed. UWB of 111% covering 3.6–12.6 GHz and 120.9% covering 3.3–13.4 GHz have been achieved in stacked fractal Maltese Cross-and Triangular Prism-shaped DRA designs, respectively.

Finally, the aspect of mutual coupling reduction has been addressed by the use of different defected ground structures. Mutual coupling reduction is the most essential factor for the use of antennas in multiple-input multiple-output (MIMO) applications. Four DRA array designs with novel DGS structures have been proposed. In the first two designs namely, fractal Tree- and stacked fractal Maltese Cross-shaped DRA array, periodic defected ground structure (PDGS) of C-shape has been incorporated to achieve mutual coupling reduction (< -15 dB). Elliptical-shaped DGS is used to reduce mutual coupling in the Triangular Prism-shaped fractal DRA array (third design). The fourth design is a Surya Yantra-shaped fractal DRA array with rectangular loop-shaped DGS for better isolation between DR elements. In all, ten novel designs have been proposed along with their detailed study.

Title of Thesis: Design and Development of Higher Order Subharmonic Mixers

ABSTRACT: Microwave mixers are inevitable modules in any RF sub-system. Enabling frequency translation, mixers have always played a pivotal role in venturing into the higher frequency domain. Progressive development in Monolithic Microwave Integrated Circuit (MMIC) technology has enabled the realization of highly condensed and complex core chip RF modules covering THz technology via the realisation of high-frequency mixers employing Schottky diodes. Likewise, the mixing phenomenon has advanced from fundamental mixing to sub-harmonic mixing wherein higher order of lower frequency Local Oscillator (LO) frequency is utilized advantageously making the circuitry compact and avoiding the need for generating higher LO frequencies. This research work involves investigation wherein three novel findings have evolved as an outcome of the research; formulating spurious frequency determination, simplifying fundamental I-Q mixer and realizing 6X Sub-harmonic IQ mixer using improved idlers. The findings are briefly described below:

Shailendra Singh (12EXTPHDE86))

1. Formulae for Determining Heterodyne System Spurious Frequencies that Coincide with Desired Output Frequency: Till date, no direct formulae have been reported for determination of the lowest order coinciding spurious.
2. Proposal and Demonstration of a Simplified Design Topology for I-Q mixers: Conventional I-Q Mixers utilize hybrids, vias, cross over or wire-bonds for realization. The proposed design is based on a unique arrangement of six RF power dividers and avoids complex structures like hybrids or vias.
3. Design and Realization of a 6X Sub-harmonic IQ MMIC using Improved Lumped Component Microwave Multi-Frequency Idler: Two design methodologies for the realisation of compact and improved microwave lumped component multi-frequency idlers for monolithic integrated circuits have been proposed and using this a 6X Sub-harmonic IQ MMIC Mixer has been designed.

MoU with Robert Bosch, Bangalore

Institute of Technology, Nirma University signed MoU with Robert Bosch Engineering & Business Solution Pvt. Ltd. (RBEI), Bangalore on January 30, 2020. The MoU involves the exchange of technical knowledge in new age technology, strategy, and innovations leading to solving real-life problems.

The MoU was signed by the Director, Institute of Technology, and the Additional Director School of Engineering, Institute of Technology. From the RBEI Mr Mohan B V, Manager-Strategy & Innovation, Mr Rohit Bhardwaj, Manager-New Age Business were the signatory authorities. Mr Karthik Rajapual, Manager, University Relations-RBEI was also present during the MoU Signing Ceremony. Mr Manoj Paramar, Alumnus of Institute of Technology and Senior Innovation Technologist at RBEI played an important role in establishing this collaboration.

While signing the MoU, it was decided to initiate several collaborative activities like joint research projects, organizing workshops/expert lectures /faculty development programmes, laboratory development, consultancy assignments in focused areas, academic interaction for qualification improvements of Robert Bosch Associates, etc.

Consultancy and Testing Assignments

- Dr Akash Mecwan, Dr Vijay Savani, and Dr Piyush Bhatasana completed a consultancy assignment titled "Electronics Controller Circuit Design for 'Solar Buddy (Solar Panel Cleaner)" for M/s RA Global Energy Pvt Ltd of ₹1,50,000/- during March 2020. Under this assignment, a solar panel cleaning machine was programmed. The machine consists of seven heavy-duty motors, which require a total current of more than 120 Ampere. These motors were to run in forward and reverse directions with variable speed control.
- Dr Dhaval Pujara completed testing of Microstrip Antennas using the Vector Network Analyser during February 2020. This testing assignment was received from M/s elnfochips.

Expert Lectures Arranged by the Department

As a tradition, the department invites experts from the industry and academia to deliver lectures to the students. The very purpose of this activity is to encourage the students to interact with the industry. Followings are the details of such expert lectures:

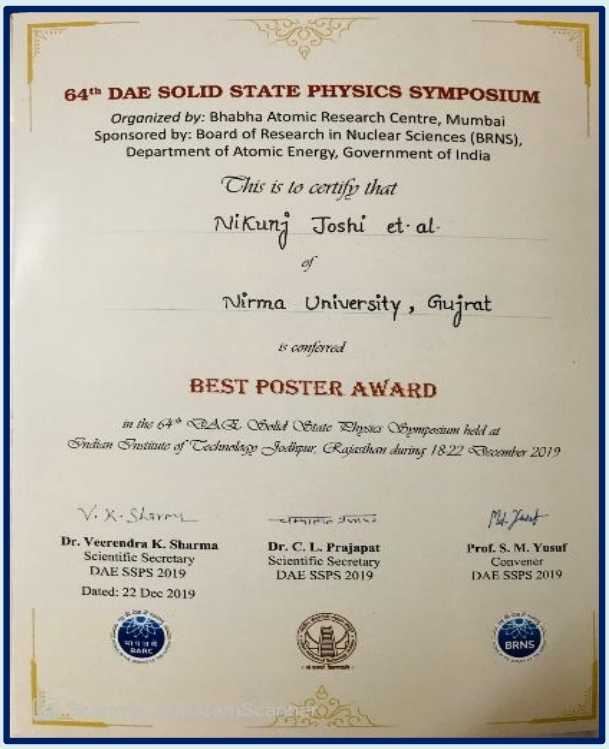
- Mr Nirav Patel, Technical Lead, e-infochips, Ahmedabad delivered a lecture on Software Testing to the students of BTech EC, Semester VI on March 06, 2020.
- Dr Sujeet Bhatacharya, Principal Engineer, Evonetix, Cambridge, UK discussed Digital Signal Processing and Machine Learning with the students of BTech EC, Semester VI on January 27, 2020
- Mr TVS Ram, Scientist, SAC-ISRO, Ahmedabad talked about Fundamentals of Higher-Level System Design to the students of M.Tech VLSI Design, EC, Semester II on January 25, 2020.
- Mr Saifee Mufadal, Principal Engineer, Provino Technologies, Ahmedabad discussed Advances in Verification Technology with the students of MTech VLSI Design, EC, Semester II on January 25, 2020.
- Dr Sanjeev Gupta, Professor, DAIICT discussed Introduction to Antenna Design with the students of BTech EC, Semester VI on January 10, 2020.
- Dr Rikin Thakkar discussed 5G Technology with students of BTech EC, Semester VI on January 06, 2020.
- Mr Nilesh Ranpura, ASIC Delivery Manager, elnfochips, Ahmedabad discussed VLSI Design and Testing: Industry Perspectives with students of MTech VLSI Design, EC, Semester I on November 07, 2019.
- Dr Rajesh Thakkar, Principal/Professor, GEC, Rajkot talked about MOSFET Device Modeling with the students of MTech VLSI Design, EC, Semester I on October 04, 2019.
- Dr Y B Acharya, Retired Scientist, PRL talked about Chandrayan-II with the students of BTech EC, Semester V on September 25, 2019.
- Mr Chirag Jinger, Technical Leader at Encore-research, LLP, Baroda talked about Microcontroller Evolution, Features and Application Development with the students of BTech EC, Semester V on September 23, 2019.
- Dr Deepak Mishra, Sr.Scientist, SAC/ISRO gave a lecture on Verification and Validation of DSP Algorithms using MATLAB to the students of MTech Embedded System, EC, Semester I on September 21, 2019.
- Dr Virendra Singh, Professor, IIT, Bombay gave a lecture on Synthesis of High-Level Digital Systems to the students of MTech VLSI Design, EC, Semester I on September 19, 2019.
- Mr Nirav Choksi, Principal Engineer, Volansys Technologies Pvt Ltd., Ahmedabad discussed Embedded System Code Profiling with students of MTech Embedded System, EC, Semester I on September 07, 2019.
- Mr Nirav Patel, Director, Accunova Engineering Pvt Ltd. (Former Senior Design and Development Engineer at Lutron electronics, USA) talked about Device Driver & Embedded System Code Profiling with the students of BTech EC, Semester VII on September 06, 2019.
- Dr Sanjeev Gupta, Professor, DAIICT discussed Fundamental of Electromagnetic Engineering with the students of BTech EC, Semester V on September 05, 2019.
- Mr Madhukant Patel, Managing Director, Reve Automation, Gandhinagar discussed Transducers and Sensor Interfacing with the students of BTech EC, Semester V on September 04, 2019.
- Mr Rahil Jha, Senior Engineer, Cadence, Ahmedabad, discussed Functional Verification and System Verilog with the students of BTech EC, Semester VII on August 23, 2019.

Students' Achievements

VAIBHAV THAKOR (17BEC118), NIKHIL PATEL (17BEC068), TARUN KHILANI (17BEC116) selected at Level II (Proof of Concept) stage of the "ROBOFEST-GUJARAT" and to participate in Level-III (Prototype) stage organised by the GUJARAT COUNCIL ON SCIENCE AND TECHNOLOGY

PRAVEEN KUKREJA (17BEC073), PUJARA DEEP DHAVALBHAI (17BEC076) awarded Active participation as maker at Yuvalay electronics lab, Vadodara in January, 2019.

KESHAVKANT SHARMA (16BEC079) selected for Advance Leadership Camp from NCC battalion, Ahmedabad in January, 2019.



64th DAE SOLID STATE PHYSICS SYMPOSIUM

Organized by: Bhabha Atomic Research Centre, Mumbai
Sponsored by: Board of Research in Nuclear Sciences (BRNS), Department of Atomic Energy, Government of India

This is to certify that

Nikunj Joshi et al.

of

Nirma University, Gujrat

is conferred

BEST POSTER AWARD

in the 64th DAE Solid State Physics Symposium held at Indian Institute of Technology Jodhpur, Rajasthan during 18-22 December 2019

Dr. Veerendra K. Sharma
Scientific Secretary
DAE SSPS 2019
Dated: 22 Dec 2019

Dr. C. L. Prajapat
Scientific Secretary
DAE SSPS 2019

Prof. S. M. Yusuf
Convener
DAE SSPS 2019

NIKUNJ JOSHI (18PTPHDS072) awarded the Best poster in DAE sponsored Solid State Physics Symposium (DAE-SSPS) organised by Department of Atomic ENERGY (DAE), IIT Jodhpur in December, 2019

SMART INDIA HACKATHON 2020

KESHAV DINESH KASAT (17BEC048), PUJARA DEEP DHAVALBHAI (17BEC076), PATEL PRATYUSHA (17BEC069), PATEL MANSI AMISHKUMAR (17BEC066), JESWANI AMAN JAGDISH (17BEC040), SAGAR BIREN PATEL (17BEC092) selected for the final round of Smart India Hackathon 2020 organised by MHRD at GTU, Ahmedabad in April, 2020.

Voice of Alumni

Connecting Dots between Dream–Desire–Goals

Minal Rohit Sampal
1st batch of Nirma EC, 1995

Do you know the difference between a dream, desire, and goals? There are several sources to gain motivation – "The Secret" – the book, motivational gurus, several stalwarts who have achieved great heights. So, I decided not to use any of these in my article. All of the above sources talk about all these elements, but in this article, I will talk about how to connect them. It is important to have a purpose to differentiate between existing and living. Animals exist; plants exist, while it is only humans on this globe that have the ability to live. However, it is on humans to choose whether to exist or to live. If the choice is the latter then it is important to connect dreams to desire to goals.

Dreams give you the ability to answer WHAT, Desire helps to answer WHY part of your dream, and goals help you answer the HOW to realise it. Connecting the dots between WHAT-WHY-HOW (aka Dream-Desire-Goal).

Once you have these three above questions sorted to get you your direction (aka Compass of life), the next important parts are more to traits that guide you stay on track. I believe persistence, finding a good mentor, perseverance (aka ability to stand-up to failures), experience, patience, and situational-quotient are the key to keep you on track without deviating while you are speeding up in this dream to desire to goal journey. Let me remind you that not everyone blessed to get all of these in the right percentage but it is still possible to achieve this journey without losing track, without losing hope.

So, I take this opportunity to share my own life experiences of how I managed to find my connecting dots. I believe in dreams, Do you? The very first thing is to dream. This is the beginning stage where you only see the end goal; you do not see how you reached there. Everything looks real and this is where your subconscious mind registers that such an event is true. This part establishes faith and trust that such an event is REAL although when you wake up you realize REALITY of the difference which should make you want to connect your dots between dreams to desire.

When you wake up the reality can make you think the REAL is all fake but this is where you understand the importance of WHAT (dream) and WHY (desire).
To accomplish WHY (desire) you need these four things:

- I can do any work that I like, all that matters is a willingness from within.
- Do it with full sincerity, dedication, and passion.

- Whatever decisions I take, I own it irrespective of the consequences
- Nothing is impossible to achieve. It is okay to fail but learn from failures and fine-tune or realign your next steps but don't feel frustrated or dejected.

These are powerful statements, but true to the core!

1. The first step is to dream. There are no limits to dreaming, there are no restrictions to dream.
2. It is easy to dream.
3. If you take the first step, ensure to work equally hard. The dream is like virtual reality but will turn to *real* reality only if you believe in it and work towards it.
4. It is okay to fail. You can face several rejections. But stand by your decisions that you believe from within. It is good to stay rigid with your decisions but be alert to learn from rejections instead of feeling disheartened.

Life is a race, hurdles, rejections, tough expectations will keep coming but when you cross each hurdle it should motivate you to move to the next. When you face these challenges, you want to put your brain in VACATION mode. You want to put your brain into a vacation responder mode to say "I am exhausted. I decide to shut off". But, the entire game is to switch ON party mode... your brain should immediately get that gush of excitement, the joy of discovering suspense to overcome the feeling of exhaustion.

The next connecting dot between desire and goal requires you to use your persistence, experience, ability to learn from setbacks, and failures to get back on your track to the end goal. Don't compare yourself with others, compare with yourself on how far you have come. Appreciate yourself for every milestone, lesson that helped to fine-tune your next steps. Remember, the answer to HOW (achieving goal) is not straight forward, there is no one single answer to get that HOW question correct...! Reason is, we all come from different backgrounds, different life experiences, and opportunities, and yet all of us can find our correct answer to the HOW part. This is the reason we should not compare ourselves with others. To each, it is his journey.

Your dreams are like a hazy dotted drawing. When you dream with intense passion and work hard then it is like a child who connects the dots in the hazy drawing and as he connects one dot with the other and other with the third one then slowly emerges a clear picture. What looked hazy slowly starts giving the kid the happiness of his own creation. After all, GOD already created these dots for you. All you had to do, like that kid, is to dream, work hard, have patience, and slowly connect the dots. There may be millions of dots – I call these dots challenges. When I say connect the dots – I mean overcome these challenges – slowly emerges the drawing which is my dream.

TO DREAM IS YOUR RIGHT
TO ACHIEVE IT IS YOUR JOB
TO WORRY ABOUT IT IS GOD'S JOB

If you want guaranteed results for making your dreams a reality then you have to first get the guarantee from within yourself that you will not lose focus, passion, desire, and patience. Then success is guaranteed.

It's just that many times we just fall short of that "thoda patience" which would actually get our wishes fulfilled. It is like the final lap in the race, you are panting for breath, you are almost there but it feels a long way still. Change your mindset in that situation, like the sportsman does – he thinks it is just a little more…. A little more….and they make it to the finish line.

I always dreamt of helping mankind, the common man! As a kid, I remember memories of Rocket launches that made me think it would be great to wear the white gown. It seemed synonymous to Doctors wearing white aprons.
I wanted to be a doctor too, but my scores didn't support my dream but desire persisted strongly. I got into engineering out of a lack of choice to get into medical. But, I believed in my intentions and dreams. I always wanted to help mankind, always wanted to bring a smile on other's faces and reduce their pain. I thought this was possible only if you become a doctor.

I remember my school days and the societal pressures around where everyone is behind you to score as if everything is lost if that golden score wasn't made. Yes, we need to study hard as it is a stepping stone to a whole lot of opportunities but when outcomes don't turn out as you expect even after all that best hard work put in then, remember that, studies make you knowledgeable to do things better, innovative but it itself is not the outcome. In India, we have so many Engineers graduating each year and yet it is a challenge to get quality students. There are so many who get their PhDs yet there are hardly any countable patents we have created that can be used in real industries. The answer lies in connecting the dots correctly.

I got into ISRO after my graduation to find myself after a few years in ISRO to be working with hospitals like Apollo and Narayana Hrudalaya to connect remote villages via Telemedicine through VSAT networks. See, what I couldn't do as Doctor turned out as an opportunity to do as an Engineer and I think this was all about finding your path back to the main track even if you drift off. This is where I would like to highlight how dreams turn to reality. My dream to help mankind became possible when I saw the possibility of using technology to help remote villages with the least medical facilities to connect with the best doctors and hospitals for saving lives. I was enabling hospitals to connect with remote villages – helping mankind. It was clear that becoming a Doctor was not the end goal but to help mankind was. I was here in the technology field and helping Doctors diagnose patients. Dreams do come true!

My second dream "bringing glory to the country" got fulfilled by getting associated with Mars Orbiter Mission "MOM".

I have always desired to reach the highest position in my work field by going into the technical depth of the work I do without losing passion and patience. As a woman, you play several roles where the going gets

tougher than the male counterparts. You are not just battling with competitiveness, your dreams, your time at work but you also have to manage the home front, the kids, and your own support-system–your family. This is where priorities, multi-tasking, working as a team, time-management and patience & perseverance pays off. Your true motivation lies in how well you balance these parameters to maintain your focus.

I come from a Gujarati family where my father wasn't a Doctor or from Engineering background; I studied in English medium, state board schools, and in some cases schools that were in small-town sectors. This is where it became firm that it doesn't matter what background you come from if you know your WHAT-WHY-HOW clearly.

Golden Rules:

- Set short term **Goals** as you move on in life to reach that long term vision that defines we HUMANS live; don't exist!
- Set your **Priorities** in life. You always have to multi-task based on priorities, situational circumstances, and our backgrounds.
- Being creative and innovative is genderless. Anyone born as HUMAN can do it. All you need is a **dream** and **desire**.

Hope this long article helps discover what it takes to connect dots between dream – desire – goals.

Placement Mantras...!

Rakshit Goyal
(16BEC026)

Pranjal Shrivastava
(16BEC020)

We, the Student Placement Coordinators from Batch of 2020 are conducting a series of sessions for career development under the name "Placement Mantra, by Senior Friends". These are being hosted online from 14th June 2020 on the Google Meet platform.

These sessions are aimed at providing the necessary skills and information for the placement process and higher studies, in order to give an insight into these career paths. Exclusive sessions are being organized for each sub-

field of the core ECE Branch as well as for other industries like the IT Sector, Business Development, Finance, Marketing, etc. Additionally, sessions are being organized for the students aiming for various higher study programs like MS, MTech, MBA, etc. and their relevant admission procedures.

The first session of the series aimed at providing a generic overview of a placement procedure conducted on campus. The session gave the attendees a clear idea about the placement process and the DOs and DONTs. The effects of COVID-19 on the job market were discussed thoroughly, with special attention to the core streams. Preparation strategies and tips for written tests and interviews were discussed in depth. Important subjects and skills were shared along with appropriate time management strategies, keeping in mind the existing workload from the summer internship as well as the proximity of the placement season. The art of designing a resume was discussed at length covering all the important aspects like tailoring a resume for specific companies, mentioning facts in an appropriate manner, making it catchy and concise. Interview tips were given based upon personal experience and the experiences during our tenure as the Student Placement Coordinators. Everything from before entering the interview room to leaving it was discussed rigorously. Emphasis was given on knowing the projects mentioned on the resume thoroughly. The importance of professional networking platforms like LinkedIn and Glassdoor was also stressed upon keeping in mind the current requirements of the job market. This would also help in gaining a better understanding of the different job profiles available and the skills required for them, directly from the hiring company. Apart from campus placements, the essentials for off-campus placements were also shared with the attendees, including the platforms to search for jobs and networking with professionals working at a company. Options other than placements such as higher studies, competitive exams, and starting own ventures were also discussed briefly. Insight for all the upcoming sessions specific to certain fields options was also given.

The upcoming sessions are exclusively focused on careers in the subfields of core ECE like VLSI, Embedded Systems, and important programming concepts. Exclusive sessions for other sectors like the IT sector, Machine Learning, and non-tech fields are also planned. For each of these sessions, various speakers from various reputed organizations (ARM, Cypress Semiconductors, Oracle, Xilinx, Mentor Graphics, Intel, TCS (R&I), ZS Associates and many more) are invited.

These sessions are being conducted to provide the relevant and authentic information specific to the placement process and other options at the Institute of Technology, Nirma University to the junior batches. We wish that the upcoming batches adopt this process for their juniors and assist them with the prevailing trends and technologies. We hope to see a positive outcome from these sessions. To all our juniors- "You don't know what you're made of and the day you will realize that you'll appreciate the institute.

All the best...!"

MADAM OPPORTUNITY AND I

Shivang Dalal
(16BEC040)

Since I am writing this for the departmental magazine, a platform where we can wander off of the syllabi for a bit and visit the bustling boulevard of activities and developments, while peeping into anecdotal stores of fun beautiful experiences; I'd like to share my encounters with *Madam Opportunity*, who was very graceful to come my way and teach me heaps and bundles about team building, leadership and life in general.

Choosing EC as my major in college, I thought, would be just an interesting dive into the depths of the subject I loved. However, surprisingly and un-expectedly might I add, it turned out to be a phase of my life which did not just quench my thirst for questions about electronics but also made me discover a new, wider spectrum of my skill-set. It helped me satiate my hunger for exploring this newfound joy of interacting with people and working with a team, leading from the front and contributing my bit for my alma mater.

The most I learnt about working with a team and about leadership have been during my times with the IQAC (Internal Quality Assurance Cell) and ECO (Electronics and Communications Students' Organization).

I was humbled to be nominated on board the IQAC by the Director of our college. Attending meetings with the pioneers of management like the Vice President of the University and various Head of Departments all veterans in their field of study, observing them work for the betterment of the students, seeing up-close how they interact with industry big-shots and just being a part of this board made me learn so much about how to be a good leader that I tried to imbibe it and implement it in any possible way I could when I got the opportunity to do so.

When I got the chance to serve as the President for ECO, my team mates and I wanted our tenure to be one where we could break the negative stereotypes about engineering, and establish a more active and interactive culture which promoted curiosity, intent to perform and a spirit of belonging for the department and the college. We wanted to do away with the pre-set module limiting any student organization's existence to just one fest per year. Instead, we decided to break the mould and sprinkle the whole year with events and functions, which we very successfully did. We wanted to make interactive student involvement our first priority and the spirit of belonging for the institution, our primary mission.

Leading the ECO board was a wonderful experience which taught me how beautifully different every individual is and how one has work with their team in order to come to decisions which are best for everyone. It taught me about how unique everybody's perspectives can be and one should value them while keeping the core values of an organization in mind in order to achieve holistic progress.

In retrospect, I am grateful to *Madam Opportunity* for letting me work with people and to be a leader at times, and for making me choose engineering and EC. Today when I see the words "Graduated with Distinction" on my score-sheet, it makes me happy, that even though I came in searching for technological answers, which I definitely found, I am leaving with bonus lessons of life as well.

Power of Alumni...!

Dr Sachin Gajjar
Associate Professor, EC

It is said that an institution's alumni are the reflection of its past, representation of its present, and a link to its future. Alumni are brand ambassadors of an institute and the best advocates for graduating students. The Placement Team of our department could actually realize it in this summer. The story goes like this... In BTech Semester-VII curricula, there is a course, SP701 Practical Training wherein the students are to take training in the industry, research organization, or a renowned academic institution during their summer break. This year, due to the COVID-19 outbreak, based on the advisory guidelines of UGC and AICTE, our University decided to go for 'Online Internship' where the internship related activities can be carried by the students digitally from their home. With the current challenging time, it was a tough task for the Placement Team to place 125 students into industries. The team under the leadership of HOD thought of approaching the University's loyal supporters, the ALUMNI to help them in this herculean task. With amazing support from the alumni, 112 students were placed in 38 different industries either owned by the alumni or where they are a part of it. The count includes 17 students who are getting a stipend for their internship work. Help was extended by Alumnus of all the years including the one from 1999 batch to the one from 2019 batch. The placement team is incredibly grateful for the overwhelming generosity and care for alma matter shown by the Alumni. The team will always look forward to the Alumni for their support for the years to come!

What does Machine Learning have for an EC Engineer?

Dr Ruchi Gajjar
Assistant Professor, EC

Being an EC Engineer, which are the areas where I can employ machine learning (ML)/ Deep learning (DL)? This could be the question that would be bugging a lot of students like you, these days. The field of ML and DL is not just limited to computer/ IT applications like face recognition, object detection, or prediction of weather and stock market. You can actually apply this buzz word and booming technology in applications related to Electronics and Communication – your own degree of Engineering. For instance, let's talk about:

- VLSI design, then ML is currently used in Chip Design (e.g., new interconnect fabrics, new combinations of memory and computation, etc.), predicting places where chip may experience manufacturing defects, load prediction on CPU, voltage scaling to save energy. For an ASIC design, ML can be applied for RTL code analysis to detect and correct problems for scan insertion or for coding guideline violations, Regression analysis in Verification for identifying test cases, in Synthesis for early detection of issues with floor planning or congestion early, before and after the layout.
- Electronics, where ML is used for prediction of successful field-programmable gate arrays (FPGA) compilation strategies, behavioral modeling of microelectronic circuits and systems, to predict the Power/performance/area (PPA) given a register-transfer level description of a circuit, eliminating the need to undertake the lengthy physical design process.
- Antenna and Wireless Communication, where ML is used for parameter optimization in antenna design and Wireless Communication offers a wide scope for ML in areas like channel modelling, signal estimation, and detection, energy efficiency, cognitive radios, wireless sensor networks, vehicular communications, and wireless multimedia communications. To give you a better idea, ML is used for resource management like power control, spectrum management, backhaul management, cache management, and beamformer design and computation resource management in the MAC layer, networking and mobility management in the network layer for applications in clustering, base station switching control, user association, and routing, and localization in the application layer

And trust me; this is just the tip of the iceberg. If you dig in a little further, you may find that ML has applications in almost every course that you have studied/ are studying.

So, there's no need for you to leave your core branch in the race of doing something in ML, but rather you can come out with project and research with is an amalgamation of EC and ML. You just need to put on your thinking hats, use your domain expertise, and of course, a little bit of ML, and who knows, you may come out with solutions to conventional problems listed above and many more.

Good luck and happy learning...! Waiting to see your accomplishments.

Online Education Tools & Compilers

Dr Vijay Savani
Assistant Professor, EC

JDoodle: It is an online education tool as well as it provides online compilers/interpreters for many of the programming and scripting languages. The aim of this website to help students to learn & programming online.

(https://www.jdoodle.com/). JDoodle provides services like Online Compiler and IDE & Supports collaborative code, Online Terminals for Databases & It supports 68 Languages, Free API to compile and Execute Programs (limited execution per day), Supports Online Assessment, etc.

Codechef: It supports C, C++, and Java, very close to the real desktop IDE. It is super-fast and easy to use. Suitable for students in the classroom and assignments, practicing interview problems. It is a competitive programming website. It is one of the best options for running programs online. It is a non-profit educational initiative of Directi, aimed at providing a platform for student. **(https://www.codechef.com/ide)**

Ideone: It is an online compiler and debugging tool which allows you to compile source code and execute it online in more than 60 programming languages. **(https://ideone.com)**

PyFiddle: It is a free lightweight Python IDE to run and share Python scripts with some nifty features. For competitive programming. **(https://pyfiddle.io/)** & other similar **(http://pythonfiddle.com/)**

Tutorials point: Originated from the idea that there exists a class of readers who respond better to online content and prefer to learn new skills at their own pace from the comforts of their drawing rooms.
(https://www.tutorialspoint.com) (https://www.tutorialspoint.com/codingground.htm)

Edaplayground: It gives engineers immediate hands-on exposure to simulating System Verilog, Verilog, VHDL, C++/System C, and other HDLs. All you need is a web browser. The goal is to accelerate learning of design/testbench development with easier code sharing and simpler access to **EDA** tools and libraries. **(https://www.edaplayground.com/)**

Websites to Learn Coding & it's Challenges: Learning to code has grown over the years from just a hobby to a career. Today, you can learn coding online, entirely for free. Gone are the days where knowing a programming language was reserved for the select few, or cost quite a hefty amount of money. These are some of the online platforms (free up to certain extent)

https://www.khanacademy.org/computing/computer-programming
https://www.bitdegree.org/learn/
https://www.freecodecamp.org/
https://www.codechef.com/
https://www.hackerrank.com/dashboard

Mob Detection and Alert System using Drone

Abhisek Rakholia
(17BEC078)

Rakkshab Iyer
(17BEC079)

An Unmanned Aerial Vehicle (UAV) is a pre-programmed drone that can serve multiple- applications based on the user requirement. It can be easily mobilized and also manually controlled if necessary.

This project focuses on a real-time Unmanned Aerial Vehicle (UAV) system which is capable of detecting multiple people unlawfully gathering at critical locations and alerting the concerned authorities by providing the GPS location of the pseudo-mob. This system assists in the prevention of riots and brings the guilty to justice. Thanks to the robustness of YOLO algorithm which aids in-person detection and ease of access of UAVs, after several testing phases this system proved to be much efficient than the existing surveillance systems.

Taking into consideration the present COVID-19 pandemic and the commotion prone areas wherein Section 144 has been issued which prevents the gathering of more than 4 individuals at a given location for a specific time, this system is a need of the time and will prove effective when the above-mentioned circumstances are encountered.

Actual Drone Designed

Aerial View Through The Drone

Build for Digital India 2019:An Experience Worth Sharing!

From left to right, Nikhil Patel, Rishabh Kabhya, Vaibhav Thakor, Yash Shamnani, Tarun Khilani

Google and Ministry of Electronics and Information Technology organized Build for Digital India, 2019 to provide a platform to student developers for solving the most pressing problems with the latest technology. This program was aimed to foster innovation and entrepreneurship among Indian science, technology, and engineering students in areas like healthcare, agriculture, education, smart cities and infrastructure, transportation, woman safety, accessibility and disability, and digital literacy. The program kicked off with 8 weeks of Learn and Build phase. We developed a solution for farmers to automatically detect plant diseases using Machine learning. Our idea was to use a drone with a camera which uses a deep learning model to detect disease in farms while traversing automatically and report the data to the farmer on an android application. This idea was selected for the second phase, Feedback Phase; we were invited for the 2-day in-person boot camp at Google Mumbai Office during February 6–7, 2020. Google never misses the chance to show hospitality towards its guest and we neither were an exception. The luxurious trip and stay at Mumbai were arranged by Google and it was an amazing experience for all of us. The next two days of boot camp were more exciting for us as we got a chance to get a peek inside Google's office and its culture. The first day started with an introduction to our host Mr Siddhant Agarwal, program coordinator at Google, India. We also got to meet other selected teams from prestigious private universities, NITs, and IITs. All the teams were assigned mentors with expertise in different fields to foster innovation and scalability to our ideas. We got to talk over our idea with some really good mentors who were entrepreneurs, product manager, android developers, and deep learning experts. We got to learn a lot about how to turn an idea into an actual product, designing the product by taking account of the customer's view and how to sustain the growth of the company. We also got to enjoy the delicious cuisines at Google's cafeteria during breakfast and lunch hours which was an integral part of its culture.

The second day was very crucial for us as we were going to present our ideas to the juries who will select top teams for the next phase. We almost spent the whole night on the first day preparing the presentation and deliveries. The most exciting part of the second day was that we got to look at other teams' ideas and solutions in detail. There were some impressive ideas like the stick with the voice alert for visually impaired people, the app for converting the sign language to voice for deaf-mute people, and the app to generate indoor maps for colleges and schools. We had an amazing experience with delivering presentations and answering questions in a very professional manner in front of the experts. Being acknowledged by a company like Google and to get a chance to show our knowledge and experience in front of other engineering students and experts was breath-taking. We hope our juniors will also develop similar ideas and get a chance to participate in these kinds of events in the future.

Data Analysis Vs Data Science

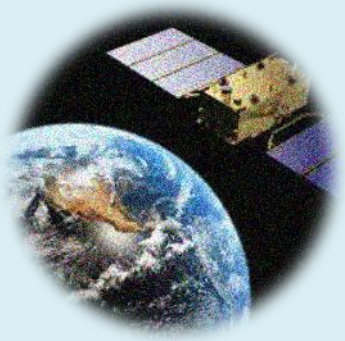
Abha Buch
(18BEC003)

'Big data' has become a buzz word in the tech world due to its ability to provide results that businesses can glean. However, due to the presence of such large datasets, the need for proper tools to parse through them in order to distinguish the Right data from Wrong data has been felt. For deeper insights into the datasets of big data, the fields of data analytics and data science have emerged and are now an integral part of Business Intelligence. Due to closeness and similarity of work fields, these two terms are often mistaken to be the same thing. For understanding the fundamental differences between them, one needs to start from the definition itself.

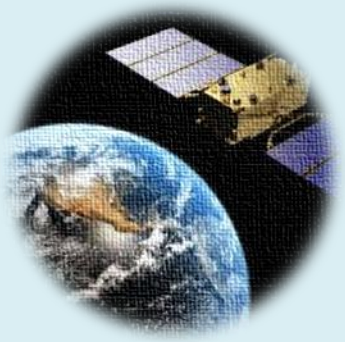
'Data Science' is a heterogeneous field relying on scientific processes and complex algorithms to extract relevant material from raw, unstructured data. It is related to big data mining. Data science concentrates on effective methods to capture, interpret, and organize data, the final product of which, through statistical analysis, helps uncover actionable insights for existing issues. Whereas 'Data Analytics' includes discovery, comprehension, and communication of significant patterns in assembled data, which aids in effective decision-making. It involves the simultaneous application of statistics, computer programming, and operations research to appraise the performance of a firm.

These definitions still might not be enough for a layman to understand the exact difference. What can't be solved through definitions can be solved through better understanding the kind of work that data scientists and data analysts are supposed to do. Data scientists know what questions must be asked to lead the company in what direction, while data analysts find answers to these questions and determine which route to success is the best. Data science points towards the foundations and helps dissect big datasets to initiate observations, while Data analytics work on the realization of potential acumen and use this information in many applications, software, and otherwise. The kinds of work available in Data science are Data Scientist, Machine learning Engineer, Applications Architect, Enterprise Architect, Data Engineer, and Business Intelligence Developer. Whereas the top-paying career opportunities in the field of Data Analysis are Data Analyst, Financial Analyst, Market Researcher, Corporate Strategy Analyst, Actuary, Web Analyst, and Management Reporting.

For people who are interested in making a career in this emerging and one of the highest-paid job sector one need to have strong fundamental foundations in a few subjects. Data scientists should have substantive expertise on machine learning, hacking skills, statistical knowledge, and traditional research. Data analysts, on the other hand, should have the training to identify trends, examine large data sets, develop flowcharts and algorithms, establish patterns in business strategies, and visualize presentations. If you are excited by math, statistics, and programming, then Data Science is for you. If it is computer science and business that does it, then you must consider Data Analytics. Though the two fields can be considered as two sides of the same hand, their functions being highly interconnected, the difference between them shows in their applications. At the end of the day what matters is job satisfaction and a sense of happiness and fullness and not the amount of salaries one is earning so it is important to choose a career that can provide you these.



Electronics above Earth



There is one more world present above us developed by engineers & scientists like us. Here, in this article, we are going to talk about the Challenges for Space Electronics with some remedies for those challenges and the role of EC engineers in space application. So, fasten your seat belts, switch off your cell-phones and get ready for a quick tour to know Electronics above the Earth.

Electronics in Space Applications

Nowadays, Life is impossible without satellite services as many sectors use it for various purposes including global finance, telecommunications, transportation, weather forecasting, national defense, and aviation. We can classify satellite services in three broad areas: Navigation, Communication, and Earth observation. Navigation satellites are used for the GPS, during disasters Communication satellite pro-vide uninterrupted communications services. Earth observation satellites are used for transmitting environmental data. While you are reading this article more than 1500 satellites are orbiting our earth! Microelectronics plays an important role in space electronics. Analog Devices has been supporting the aerospace and defense markets for decades with high reliability. Electronic warfare, radars, communications, avionics, unmanned systems, and missile are major applications in aerospace. Nowadays space market focuses on the solutions for the challenging requirements of the space.

Manan Jain
(18BEC050)

Neel Joshi
(18BEC045)

Challenges for Electronics in Space

- Effects due to Temperature swings: In space, there are rapid and wide changes in temperature as compared to that of Earth. It not only rises to 1200C in presence of sun but also falls to the -1800C. Electronic components which work efficiently at low temperature are very useful for space technology as they reduce weight as well as manufacturing cost by eliminating the hit sinks In design. These components are tested before used for space applications which includes re-start operation and thermal cycling for different frequency signals.
- Radiation effect: Radiation present outside Earth environment causes variation in some parameters of electronic components or sometimes can result in complete functional failure of the component as well. Basically, Itis

the emission of energy as electromagnetic waves or moving subatomic high-energy particles which cause ionization. There are two types of radiation effects.

- **TID:** Total Ionizing Dose (Long term effect) A particle passing through a transistor generates electron-hole pairs in the device's oxide or inter-face oxide and transfers energy through the material. This phenomenon is known as TID. Increased charge carriers affect several parameters of semi-conductor devices or may lead to complete functional failure.
- **SEE:** Single event effects (Single-particle effect) It can be defined as an ionizing effect caused by a single charged particle.

It is classified as soft errors and hard errors. Soft errors can cause bit flips, changes in the state of memory cells or registers, component to reset, and lock-up. Hard errors are errors in which there will be an irreversible change in operation to one or more elements of a device or circuit.

Vibration

There are execs of vibration at the time of launchings well as when satellite separates from the rocket. It can turn into functional failure in electronic components and circuits. One dynamic structural shock which occurs when an explosion occurs is "Pyrotechnic shock", which is the response of the structure to high frequency or high magnitude stress waves that propagate throughout the structure as a result of an explosive charge. It occurs during the separation of two stages of the rocket.

Scope for EC engineers in space Industry

Now, as we are aware of the challenges as wells importance of electronics in space application let's take a glance at some opportunities for an Engineer in this field. For any space program, we have to develop we require the solutions for the above problem, so here we engineers have to make the way out, We have to develop the innovative method to prevent the malfunctioning of the system due to the effect of the space environment. As an EC engineer, we can work with Space Organization, Electronic Component Manufacturing Companies for manufacturing of Space satellite, and Electronics components as Scientist/Engineer (SC), Controller in semiconductor Laboratory (SCL), Technical Assistant (Electronics), Technician (Electroplating), Research Associate, Project Director & Manager, etc. So EC engineers have got a great scope in the Space Industry.

In this article, we have seen the application of the electronics in outer space which briefs us about the need for electronics in Space Industries. Then we have discussed the major challenges faced by electronic devices and circuits due to harsh and critical space environments. Then we have listed some of the roles of EC engineers in Popular Space organizations, but the roles are not limited to those listed here but we require EC engineers to deal with the challenges offered by space to electronics to find, implement and test the electronic and make it ready to be used inscapes, Space Industry is an emerging scope for EC Engineers as well as other engineering streams. Till now the limits of our universe are not known, so the scope of engineers in the Space Industry seems to be limitless...

Khoj – The Poetry

दास्ताँ-ए-जिंदगी

बैठ जाती हूं मिट्टी पे अक्सर
क्योंकि मुझे अपनी औकात अच्छी लगती है
मैंने समुंदर से सीखा है जीने का सलीका,
चुपचाप में रहना और अपनी मौज में रहना।।
ऐसा नहीं है कि मुझमें कोई ऐब नहीं है पर,
सच कहती हूं मुझ में कोई फरेब नहीं है
जल जाते हैं मेरे अंदाज से मेरे दुश्मन
क्योंकि एक मुद्दत से मैंने ना मोहब्बत बदली ना दोस्त बदले
एक घड़ी खरीद कर हाथ में क्या बांध ली
वक्त पीछे ही पड़ गया मेरे
सोचा था घर बना कर बैठूंगी सुकून से
पर घर की जरूरतों ने मुसाफिर बना डाला
सुकून की बात मत कर ऐ गालिब
बचपन वाला 'इतवार' अब नहीं आता
शौक तो मां बाप के पैसों से पुरे होते हैं
अपने पैसों से तो बस जरूरतें पूरी होती है
जीवन के भाग दौड़ में क्यूं वक़्त के साथ रंगत खो जाती है
एक सवेरा था जब हंस कर उठते थे हम और आज कइ
बार बिना मुस्कुराए ही शाम हो जाती है
कितने दूर निकल गए रिश्ते को निभाते निभाते
खुद को खो दिया हमने अपनों को पाते पाते
लोग कहते हैं हम मुस्कुराते बहुत हैं
और हम थक गए दर्द छुपाते छुपाते
खुश हूं मैं सब को खुश रखती हूं
लापरवाह हूं फिर भी सबकी परवाह करती हूं
मालूम है कोई मोल मेरा नहीं फिर भी,
कुछ अनमोल लोगों से रिश्ता रखती हूं।।

दरार

वह वसंत ऋतु की नरम धूप सी थी,
मै था उन पत्तो सा साफ,
वह शीतल हवा में खिलखिलाती,
मै झुखकर करता उसे सलाम,

वह मेरे सामने चमक उठती,
और ले आती मेरे चेहरे पे मुस्कान,
मै बस ढलती धूप को देखता,
की वह हो जाती अनजान,

मै था उस उलझी हुई राज़ सा,
वो थी जैसे खुली किताब,
मै अपने राज़ बेपर्दा करने को तैयार,
और वह बंद करने को अपनी किताब,

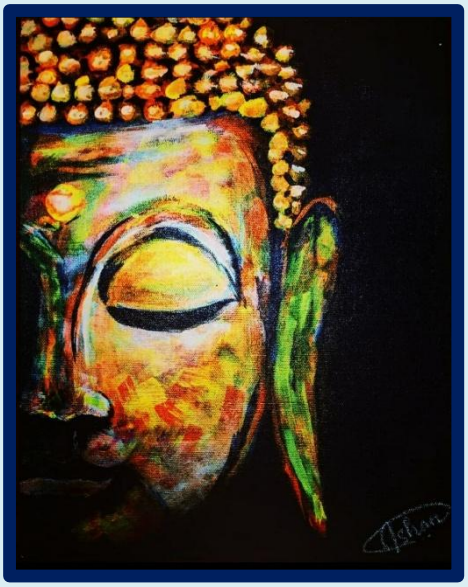
दर्द मेरा गहरा था,
जा नहीं सकता था उसके साथ,
बोलने को यह लब्ज़ सय्यम ना थे,
ना उसे छोड़ने को यह हाथ,

एक दिन मै बिना बताए चल दिया,
बंद कर के अपनी किताब,
वह बेहती रही नदी बनकर,
रह गया तो मेरे पत्थर दिल पे एक दरार..

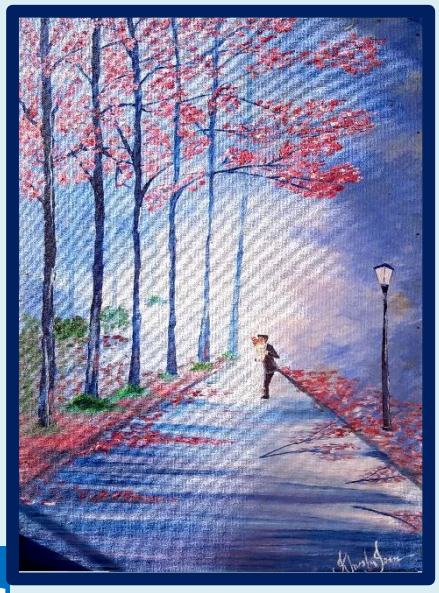
Khoj – The Paintings

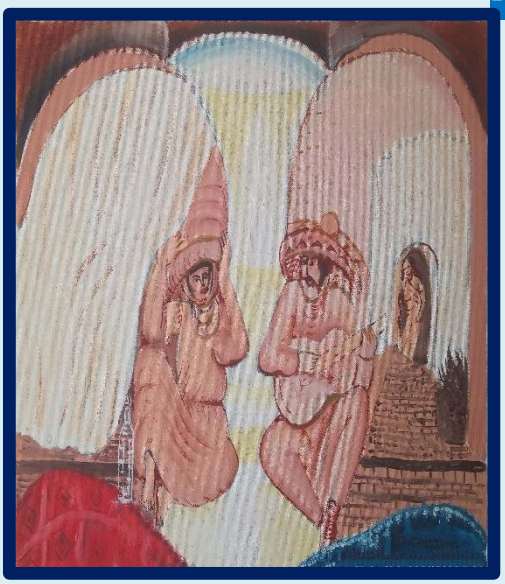
Ayushee Samridhi
(17BEC013)

Ishan Gupta
(18BEC040)



Khushi Jain
(17BEC038)





Divya Modi
(18BEC059)

Hemangini Katara
(16BEC154)

Poojan Thaker
(17BEC117)

Khoj – The Gallery

Ambika Lakhera
(18BEC006)

Vardhan Batavia
(18BEC013)

Dhruv Shah
(17BEC097)

Jivansu Vyas
(18BEC044)

Rahil Patel
(18BEC073)

EC Students in Vaudeville

Pragya Jhala
(18BEC043)

Ramika Chakhaihyar
(17BEC081)

The ECians have always been known for the zeal and enthusiasm they display in various college events. Be it technical or non-technical, inter or intra college, etc., the students of our department have always exhibited passion and commitment in any work they pursue. College events provide a platform where one can showcase their hidden talent. The Electronics and Communication Department, being no exception, is known for its unveiling of innumerable artistry in different domains and the ever-lasting spirit of the candidates. Vaudeville'19 had been a hit for the ECE department. The fest brought exhilaration as well as encouraged participants to find their abilities. Recognizing a few of the hidden talents our department owns, the fests have the sole motto of nurturing the skills of the students. Having dominated Nukkad and Drama for ages, ECE once again bagged the first and second prize respectively in these fields. Major issues of our society "Depression, Let's Talk" and "Ghar" were taken into account, to spread awareness of the same. The best way in which one can express oneself is via dance and music. How can the ECians lack in this? Having secured the first position in Group dance and Cypher (Mayank Ray) was good enough to satisfy our thirst for winning in this category. Classical Instrument playing also got recognition by Viraj Mankad and Heli Hetalbhai Shah securing the first and second positions respectively. Apart from these, Akhilesh KV (Champion in Spell Bee) and Mitali Pitliya (Winner of Fireless Cooking) also made the department proud. Jhanvi Jha received the title of "Miss ITNU" displaying a charming persona the students of our department hold. Art and Craft too had a stand by Heli Hetalbhai Shah being awarded as the winner in rangoli making.

EC Students in Co-curricular Activities

Team Robocon: The Pride of Nirma

Jyotika Gurnani
(17BEC043)

National Robocon 2018: Institute of Technology, Nirma University crowned champions again!! This was the headline that drove each and every Nirmaite into buoyancy and immense gratification. 2nd March 2018, the day when every Nirmaite was glued to their TV sets or cell phones with fingers crossed, in extreme anticipation and watching anxiously the thrilling finale between MIT (Pune) and NIRMA. Eventually, the results flashed and NIRMA was announced the National level winner of the Robocon 2018 competition. That was the moment of sheer euphoria and pride for each Nirmaite. To be recognized as the National Champions of one the biggest Robotic competition for 8 times is a huge achievement for any institute. ROBOCON, the acronym for ROBOtics CONtest, organized by Asia Pacific Broadcasting Union (ABU) since 2002. In this competition, the team has to design a robot, which has to complete a specified task within a stipulated period of time. The team whose robot is able to perform the task flawlessly and efficiently is declared as the winner. Every year the contest is conducted by a member country who announces a theme for the competition. The team should include an instructor, a team leader, a manual robot operator, and an automatic robot operator. This contest mainly endeavors to create a platform where technical innovativeness of budding scientists and engineers can be nurtured and given a practical shape.

Every year the team recruitment process starts after the national competition. The selection process takes place very systematically in 3 stages. The first stage is the written test. One who clears written test is called for the personal interview. The final phase of this process is called the probation period. Here the selected students are given certain tasks and are constantly looked after by the present members. The one who completes the tasks passionately is given the golden chance to be part of this invincible family. At present this family consists of 15 such curious minds from Electronics & Communication, Mechanical, Computer Science, Instrumentation & Control, and Electrical department. At present, 5 students from ECE are part of the team.

Every senior member trains their juniors and year by year they get acquainted to train their juniors and this is how ROBOCON has built utilitarian culture. After the announcement of the theme, they start designing their robot and many prototypes are made. Team members start working simultaneously on multiple mechanisms and after so many trials they figure out the simplest and easiest approach to complete the task. Team members working in different fields assemble all the parts and make the necessary connections to build their robot. Here embarks the onerous journey of testing, practicing, and debugging. But as we all know every journey has peaks and troughs, there are times when a robot does not work well or the model may collapse. But all this does not slacken the high spirits of members instead instigate them to work harder for the uphill battle.

"THE MORE TIME YOU SPEND WITH MACHINES, MORE THEY WILL UNDERSTAND YOU" quoted beautifully by alumnus HARSH VARDHAN SISODIYA. In a nutshell, "ROBOCON" is a place that provides you a chance to make positive, substantive and lasting contributions to your technical knowledge and hone your skills latest advancement in technologies, a place full of like-minded and innovative students gathered to witness the magic of technology embedded with the miracles of innovation.

EC Students in Sports

K V Sai Akhilesh
(17BEC050)

"Ab toh EC me Akhilesh aur Abrar dono hai, football ke saath cricket me bhi accha chance hai jeetne ka!" This was the general perception off all the cricket enthusiasts in Nirma when the inter-branch cricket tournament, popularly known as Techno cup (2018) had just started. Their imagination was poles apart from reality. In their first game against Electrical, team EC got bundled out for a shameful 34 runs and this got chased down inside 4 overs. They lost the next game too against Chemical. To make things worse, Team EC had to forfeit their third game as only 5 players actually made it to the ground in the third game. It was still positive as they now knew that they need to start from scratch. Before even looking at good players, they first had to pick players who were first dedicated to this game. Jump to 2019 Feb, and the selections for another similar tournament GPL were being done. The idea was clear, to pick more juniors than seniors, as they were much more dedicated. They start GPL 2019 with as many as 10 Freshers. It is the same story again, they lose both their matches and get knocked out. But there was hope, as both were closely fought matches. And now it was just about fine-tuning the squad of 15. Techno cup is about to start and Team EC gets a surprise as Laksh Nayak, one of better tennis ballplayers of Nirma, agrees to play. First up they face team IC. Target is 112 in 15 overs and they're in a desperate situation as they need 52 runs in the last 4 overs. To everyone's surprise, Akhilesh and Laksh pull off this game to hand EC their first win ever in Techno-Cup cricket. They scrape through to the semi-finals to the face the Heavyweights and their wrecker in chief from last year, Team electrical. Everyone had written us off, but Team EC hadn't. They bowl them out for a mere 65 and sail through the target in just 13 overs. But now they face their biggest challenge ever, Team Civil, which had as many as 8 players in their team already playing for Team Nirma. But no miracles this time. They lose badly to them. But they were proud runners up. From forfeiting their 3rd game in 2018 to finishing as the runners up in 2019, they had come a long way. The dream of winning TECHNO CUP is still alive and if things are fine in 2021, you will possibly see them lifting the trophy this time.

Agrini
17BEC005

The Electronics and Communication branch has always held some brilliant sportsmen in every batch. But not every one of them continues the sport as the semesters unfold. I, specifically, have experienced the scenario of women's sports in EC and ITNU as a member of the Nirma Sports Association. The Institute has many opportunities to offer yet it falls short of female participation. The University has arranged National Level opportunities for team games such as kho-kho, volleyball, cricket, tennis, badminton, kabaddi; Institute organizes inter-branch, inter-institute games; many inter University games are going on throughout the year in different universities like GNLU, PDPU, DAIICT, Adani, IIT-Gn. Unfortunately, not many girls show up. As distressing as it sounds, girls lack the motivation and desire to dedicate to at least one sport. We are studying in one of the most versatile branches of the Institute and sometimes it gets difficult to manage everything at once. But I think, as a student, apart from the curriculum, we must have something for ourselves where we can withdraw from the monotony. Sports is one such retreat. I have been participating in Athletics in inter-institute and university games, held at our university, PDPU and GNLU, for 3 years and have bagged positions in the last 2 years. I am also in the girls' volleyball team of Nirma University and participated in the West Zone National tournament for the last 2 years. I have also been in the institute kabaddi team and participated in inter-institute games for the last 2 years. I would like to encourage more girls to take up a sport and dedicate some time to it. It will go a long way. Besides, all work and no play makes Jill, too, a dull girl.

Activities under the ECO

First Year Orientation

With the advent of the new semester of 2019, the new batch was welcomed with an orientation program held on July 25, 2019, by ECO. During the orientation program ECO's magazine 'ECO Gazette' was also launched for the first time. The programme was lined up with an informal interaction session to inculcate the interest of the 1st year students in Electronics wherein students were assigned a group project activity. Students were divided into groups, which had a captain and two volunteers from the present batch students. Each group was allotted a project based on real-life problems and they were to solve the problem by constructing simple basic electronic circuits. The working circuits were then assessed by the senior students and later the groups were given a chance to demonstrate and explain their design as a product. Based on the circuit design and demonstration the best team was selected as a winner and was given a certificate of appreciation from ECO. Finally, the event indeed with a visit to the Robocon lab visit where they had an opportunity to interact with the student team of Robocon and see all the equipment and machines made by the same. They were also informed about the Robocon activity and were motivated to participate in them.

ECO Orientation

Continuing the tradition of organizing the Co-curricular activities for student benefits, the Electronics and Communication Students' Organization (ECO) organized the orientation activity for the student of entire EC family. The event was organized on August 27, 2019, at C auditorium. More than 350 students of EC across all the semester participated in the said activity.

The event started by welcoming the students and faculty members of EC department. As per the tradition of Nirma University, the prayer was offered to Goddess Sarshwati. Anmol Jain, student of 7th semester EC presented a brief introduction of the ECO club and also narrated the interesting history of various events organized under ECO since its inception. The president of ECO, Mr Shivang Dalal, presented the event calendar for the odd semester 2019. He also encouraged students to plan activities for the benefit of students. He also motivated students to opt for various competitive exams like GATE, CAT, GRE, etc.

and counseled students for the same. To bring out the engineer in the students, a TED video on quadcopter was shown to them, which was well taken by the entire audience.

The newsletter of ECO, "ECO GAZETTE" was released by Dr D K Kothari, Dr Usha Mehta and Dr Yogesh Trivedi.

Dr Alka Mahajan, Director NU interacted with the student and asked for their achievements. She encouraged students to share their achievements with the department and the institute and to keep connect with the faculty members. She also invited suggestions for the betterment of teaching-learning process. The entire event was appreciated by her and she insisted to continue with such events in the future to improve the student-faculty relationship in the institute.

Alumni Student Interaction

Continuing the efforts in organizing the events for the benefit of the students, an interactive session for the students of Batch 2020 was organized on August 3, 2019. The Alumni, who completed the graduation in July 2019 and placed in the core companies interacted with the students. The session was conducted by means of video conferencing and more than 30 students of the Batch 2020, EC participated in the event. Various issues like important subjects for the placements, important topics for the placement, Core companies and their profiles for EC branch, requirements of coding skills, the impact of co-curricular and extra-curricular activities in placement, designing the resume, importance of the minor and major project, off-campus applications, etc. were discussed at length in the interaction.

Student and faculty interaction

To address the problems involved with the organization of various events and to encourage the students to bring innovations in the events an interaction session was arranged on August 28, 2019. The event was attended by Dr Dhaval Pujara-HoD, Dr Akash Mecwan-ECO Faculty Advisor, and students from all the batches of EC. The emphasis was given on the organization of the quality events, which help students for their overall development. Various issues related to the organization of Co-curricular and Extracurricular events were also addressed at length. Students showed their enthusiastic willingness for active involvement in organizing and participating in the upcoming ECO activities.

Mock Interview Session

To boost the confidence at facing the interviews in the final year students, a mock interview session and interaction with the corporate interviewer was arranged on September 21, 2019. Mr. Siddharth Mistry, Founder, Teq Diligent, Ahmedabad, and Alumni of EC, ITNU conducted the session wherein more than 30 students of the final year EC participated in the event. The expert discussed the present market scenario for EC engineers and explained the requirements of industries from an EC engineer, he also interacted with students and motivated them to do 'SWOT' analysis for their improvement. After the interaction session, a short technical test was given to the students, and after the test 7 students were shortlisted for a personal mock interview. The video recording of the entire mock personal interview was carried out, which was analyzed and feedback was given to the students by the senior faculty members. The expert also provided feedback to the students at the end of the session for improvement.

Workshop on STM32

To create an interest in the Embedded Systems in the students, an introductory workshop on the STM32 board was organized on September 21, 2019, under the Banner of ECO with the help of Pranjal Shrivastav, Jaivik Desai, and Aditi Bhatnagar, who conducted the workshop. Various features of the STM32 board were introduced. Hands-on programming was also carried out in the workshop. Participant students of final year EC appreciated the efforts by the speakers and requested to encourage such sessions in the future as well.

Sweet Distribution

Continuing its tradition, team ECO organised a Sweet Distribution event on October 22, 2019. Dr R N Patel, Director, ITNU honoured the event by starting the first distribution. Students and Faculty of EC department enthusiastically took part in this event and with that more than 300 boxes of sweets were distributed to the entire support staff of Nirma University

Workshop on Python

Workshop on 'Python'. To introduce one of the most popular programming languages, Python to the EC students and creating awareness about it, an introductory workshop on 'Python Language' was organized under the Banner of ECO. There were three sessions conducted on 06, 20, and 27/09/2019. More than 65 EC students participated in the same.

Poster Design Workshop

Poster designing has been one of the important aspects in presenting a novel work and with an aim of making the EC students aware of the technicalities involved in it, the team, with the help of Dr Ruchi Gajjar, conducted a Poster Design workshop in February, 2020.

Logo Design Competition

With an aim of re-developing the face of ECO, the team organised a Logo Design Competition during February-March, 2020. Almost 20 innovative designs were received during the given course of time and the final judgment was made by the students, faculty members, and staff of the department by giving their vote to the most suitable logo for the organisation. The newly developed logo was designed by Ishan Gupta (18BEC040), Rishabh Patadia (17BEC085), and Sameer Kanth (17BEC094).

Khoj

To have a change in the monotic routine during this lockdown, team ECO organised an online event – KHOJ for the innovative, creative, and artistic minds of the department. It consisted of categories like Paintings, Poetry, Photography, and Articles. There was immense participation in the event where ECO received almost 60 entries, from the EC students, as a mix of all categories. The work of the participant winning in any particular category has been featured in SPECTRUM – Issue 1.

Faculty Members and 2020 Passed out Batch of BTech EC (Courtesy: Abhishek Soni, 16BEC005)

NIRMA UNIVERSITY
INSTITUTE OF TECHNOLOGY
NAAC ACCREDITED 'A' GRADE

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