SPECTRUM

VOLUME 3 | ISSUE 2
JANUARY - JUNE, 2022

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 social 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

Preface

Building a legacy means to create something enduring that can be passed on. A legacy cements one's life's work as something that benefits the future generations. The Department of Electronics and Communication Engineering is well known for continuing its legacy to issue a new version of SPECTRUM semi-annually with the support of Electronics and Communication Students' Organisation (ECO).

Rutul Gandhi

With this, we are glad to present the Second Issue of the Third Volume of "SPECTRUM", which is the Department Newsletter cum Student Magazine. This issue highlights the overall development and achievement of all the faculty members, students and the alumni of ECE Department. It starts with the Voice of Faculty and Alumni whose articles motivate the students. It covers the various Expert Sessions arranged in the department in the past six months. This initiative has greatly benefited the students and the faculty members of the Department. Not only in academics but the students are also enthusiastic and keen to participate in various extracurricular activities which is depicted in the section ECs' Got Talent, Students' Achievements and Anveshan 2022. The ECE Department and the Electronics and Communication Students' Organisation (ECO) organizes various kinds of events for the holistic development of the students.

We have a strong belief that the forthcoming students will continue the legacy and design such an informative and innovative magazine.

On behalf of the Team ECO:
Rutul Gandhi (Roll No.: 19BEC033)
Department of Electronics and Communication Engineering,
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Voice of Alumni

Engineers for Nation

"No matter what is the environment around you, it is always possible to maintain brand of integrity."

—A.P.J. Abdul Kalam

As per studies, there is a trend in the young talents to choose to work abroad because of thinking of a better life. Hence the nation is facing huge outflow of the talents. The young engineers are moving abroad for work even though a lot of opportunities are available in our own country. Youth are the most important and dynamic segment of the population in any country. It is believed that developing countries with large youth population could see tremendous growth if their youth invest their knowledge in developing the country. In last few years, Government has focused to move from the conventional

Mr. Drupad Gupta
(2016 Batch Passout)

governance to e-governance under the flagship programme of digital India to provide accountability and responsiveness of the public services to common man. Over the years, govt has also realised the necessity to enhance the research work in the country instead of purchasing the foreign technologies. Hence, Government is also focusing to invest heavily in the research field to develop in-house technologies to promote make in India initiative. This transition and technological enhancement has created requirements of the engineers in different departments.This provide a lot of opportunities to engineers. Young Indians should explore these opportunities to work in India and contribute to the development of the society.

With the global and domestic economy not thriving as expected, the increasing rate of unemployment and fear of the job security in youth, the public sector has become one of the most sought after career options. Offering an above-average standard of living, security of tenure, a well-defined promotion structure, and various other perks such as housing, a car, home help, etc., it competes with high-end private sector packages. Job security is what makes the public sector a better place to work and this is what attracts the large part of working population to go for public sector. The public sectors offer variety of work ranging from management to engineering, accounts to research. They also offer the exposure to various challenges due to diversified working areas start from the beginning of the career. The best perks in working in public sector is the work life balance. The public sectors has well defined promotion & pay structure which is better when it competes with private players to kick start the career.

The opportunities of electronics and communication engineer in the public sector has grown up exponentially due to focus on progressive technological advancement by make in India programme, digital India programme and India's Semiconductor mission (ISM) initiatives of govt. of India. This has led to huge job opportunities in the electronics sector.

Voice of Alumni

The government always remains active for recruiting such talents in India to meet the technological development requirements of the country Hence governments has their own organisations to recruit the engineers in India. To fulfill the requirement of the central government services, Union public service commission (UPSC) is established which is a talent recruitment organisation. It conduct the recruitment drives from time to time to search the Indian talents which helps government to implement their policies for the development of the society. Similarly, for states, state public service commissions are there.

For engineers, one such recruitment is organised by UPSC every year. The recruitment is named as Engineering services examination (ESE) which was previously named as Indian Engineering Services (IES). Electronics and communication engineers can appear for this recruitment into their own domain. This is the most prestigious and toughest examination organised by UPSC to hire young engineering talents. This examination tests each and every ability of the candidate ranging from general studies to technical know how of every engineering subject. This recruitment tests the person's ability to manage extreme pressure situations and check the response of the candidate in those situations. This examination is a three-tier examination which has the first stage as Preliminary exam (objective examination) to test the general skills as well as basic technical know how of the candidate. The second stage is mains examinations (written type) which test in depth knowledge of technical subjects. After clearing both the stages, the final stage carries a personality test (Interview) which is conducted at UPSC with panel members as top bureaucrats of the govt. of India. After such a long and arduous tests the engineers are selected as Group 'A' Gazetted officers to serve the country.

This job provide opportunity to be a part of the policy making group, a more excellent diversified job structure as well as general public dealing to directly contribute for the development of the society. This exam journey is quite tough, but it is worth giving a try. The journey for UPSC engineering services is indeed BEAUTIFUL. It makes you to evolve as a completely new person. I was also a naive young boy when I started and now I am an informed and compassionate man. This transition was not easy. There are a lot of speed breakers and storms. Fear, anxiety and frustration are a big part of it. But Euphoria, surprise and satisfaction equally contribute to make it worth the while. This journey is very transformative, patience driven and it requires strong mental stamina along with effective planning to get success at the end. Like every struggle it was very difficult in the beginning, messy in the middle and is gorgeous at the end.

Apart from this, there are many other similar opportunities for the engineering grads in the public sector. One such exam is Graduate aptitude test in engineering (GATE) which was conducted by different IITs and IISC every year to test the technical knowledge of the engineers. This exam provide opportunities for higher studies as well as the public sector undertakings (PSUs) jobs. This exam is a single tier exam which vastly test the technical side of the engineers along with aptitude as well as general English. For a good score in this exam, the engineering basics of the candidate must be very clear. This test provide the opportunity to pursue M.Tech, M.Arch, M.Tech+PhD integrated courses at the top IITs, NITs and other top universities of India as well as foreign universities.

Voice of Alumni

Apart from these, most of the PSUs directly recruit based on the score of the GATE exam. For Electronics and Communication engineering, this exam is being held every year (Mostly in February) with the paper code EC. With the score of this test, EC engineers can directly get high paid jobs in many PSUs and Govt sectors like Defense research and development organisation (DRDO), Bhabha Atomic Research Centre (BARC), Oil and Natural Gas Corporation Limited (ONGC) , National Thermal Power Corporation (NTPC), Airport Authority of India (AAI), Power Grid Corporation of India Limited (PGCIL), Electronics corporation of India Limited (ECIL), Central Electronics Limited (CEL), Nuclear power Corporation of India Limited (NPCIL), Hindustan Petroleum Corporation Limited (HPCL), NLC India Limited, Bharat Sanchar Nigam Limited (BSNL), Mahanagar Telephone Nigam limited (MTNL), Bharat Broadband Network Limited (BBNL), Bureau of Indian Standards (BIS), Hindustan Aeronautical Limited (HAL), Cabinet secretariat and many more.

Apart from GATE, some of the prestigious organisation conduct their own test for the recruitment of Electronics engineers such as Indian Space research organisation (ISRO), Bhabha Atomic Research Centre (BARC), Bharat Electronics Limited (BEL), National Institute of Electronics & information technology (NIELIT), Centre for development of advance computing (C-DAC), Delhi Development Authority (DDA), DMRC and many more.

The preparation of all these exam is common. Preparing for UPSC engineering services covers all the other technical exams (like GATE etc.) of India. Preparation for engineering services requires dedication, perseverance, strong mind along with smart work. Also, regular practice of the new technical problems is the integral part of this preparation along with basic general studies.

Even after such great opportunities, unfortunately, being a democratic nation and largest democracy in the world, India is still lagging behind in achieving technological and economic equalities, which were dreamt by our predecessors. If India is to improve upon the inequality indices, then the Indian Youth needs to take the charge and come forward to fight against multiple inequalities and contribute in nation building. Youth have the power to change the nation. Young minds are more fresh and innovative which can helps in the progress of the country. Also, govt. is providing adequate opportunities to the engineers to represent their ideas and policies for the upliftment of the nation. Only way to express the ideas and to implement their policies is being a part of the system.

On a parting note, Educational institutions should organise seminars/lecture series periodically for updating the engineering grads about the opportunities and policies of government. Also, youths should be motivated to be in India and invest their creativity and knowledge in the development of the nation. The nation has invested in the youths and it is high time that the youth should contribute to the development of the nation.

"Be persistent with your efforts and don't left in middle as there are many who can start but only few who can finish. So be a finisher."

Voice of Alumni

About Author,

I am Drupad Gupta is working as a senior engineer in Bharat Electronics Limited, Ministry of Defense enterprise. I am an alumnus (12BEC111) of Department of Electronics and Communication Engineering, Institute of Technology, Nirma University (2012-2016). I have cleared Indian Engineering Services Examination - 2021 with an All India Rank-2 and is about to join Indian Telecommunication services (Group - A officer) in Department of telecommunication, Ministry of communication. I am GATE qualified. (GATE-2016, 2017, 2020, 2021,2022 Qualified). GATE 2020 (AIR 79), GATE - 2021 (AIR 61), GATE 2022 (AIR-109).

Voice of Faculty

Beyond CMOS

Current silicon technology, Complementary Metal Oxide Semiconductor (CMOS) has been ruling the semiconductor industry for almost last five decades. It has been mainly driven by the miniaturization of circuits through transistor scaling. In addition, the increasing demand of users and fabrication support drives the technology scaling at its greatest limit. The major scaling limitations of current CMOS technology are short channel effects, high power density, ultra-thin gate oxide, quantum effects, lithography techniques and interconnection problems in complex designs. Many alternatives like low k dielectric, high k dielectric, 3-D IC, multilevel metallization etc. are possible to overcome the scaling limits. The CMOS scaling reached at 5nm. It is predicted since last few years that soon the searching of it will reach to its fundamental limit in the near future. Therefore, beyond CMOS devices needs to be explored for future viable silicon technology. This drives the semiconductor industries and researchers to develop an interest in beyond CMOS devices. The International Technology Roadmap for Semiconductors (ITRS) 2015 describes the possibilities of the "Beyond CMOS" devices at different abstraction levels.

Prof. Vaishali Dhare
Assistant Professor, EC

According to it, some possibilities at the device level are Single Electron Transistor (SET), Quantum based devices, spintronics based devices. Although these beyond CMOS devices guaranteed the extreme scaling, high speed, less power consumption in a circuit, fabrication is the main challenge in these technologies.
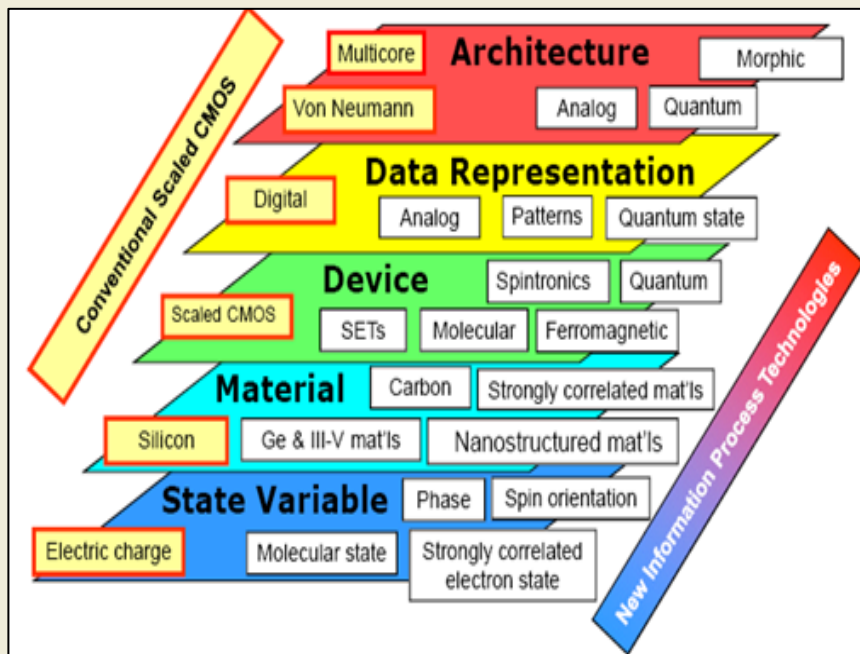
Taxonomy for Nano Scale Devices as per the ITRS
(Courtesy: ITRS 2015)

Expert Sessions arranged in the Department

1. Mr. Poojan Parekh, CEO at Oxvi, India delivered a talk on "Do We Realize the Extent of Our Potential?" to the students of B. Tech IV, M. Tech II on January 06, 2022.

2. Dr. Amit Degada from University of Kentucky, USA, delivered a talk on "Recent Advancement in Electronics Technology" to the students of B. Tech IV, M. Tech II on January 06, 2022.

3. Mr. Dhaval Chauhan, Software Engineer at Koerber Pharma, USA, delivered a talk on "The Future of Embedded System and Industry 4.0" to the students of B. Tech IV, M.Tech II on January 06, 2022.

4. Dr. Aditya Pandurangi, Psychiatrist from Karnataka, India, delivered a talk on "Understanding Stress in Adolescents" to the students of B. Tech IV, M. Tech II on January 06, 2022.

5. Dr. Neha Bhardwaj Upadhyay, Faculty of Science Economics at University of Paris, delivered a talk on "Activating the Truly International Professional: Our Role in Achieving the Global Sustainable Development Goals" to the students of B. Tech IV, M. Tech II on January 06, 2022.

6. Prof. Shankaran Anirudhhan, Professor at IIT-Madras, delivered a talk on "Research Opportunity in Analog Circuits" to the students of B. Tech IV on February 07, 2022 .

7. Mr. Jaisheel Chhatrawala, Sensor Software Engineer at L&T Technologies Services, Surat, delivered a talk on "Real Time Embedded Systems" to the students of B. Tech VI, M. Tech II on February 08, 2022 .

8. Dr. Arun Somani, Associate Dean for Research at College of Engineering, Iowa State University, USA, delivered a talk on "Single and Multi-cycle data path" to the students of B. Tech VI, M. Tech II on February 25, 2022 and March 10, 2022.

9. Dr. Shishir Shah, Professor at Department Chair, University of Houston, Texas, USA, delivered a talk on "Classification Techniques in ML" to the students of B. Tech VI, M. Tech II on February 28, 2022 and March 12, 2022.

10. Mr. Manoj Parmar, Program Director–AIShield & Sr. Innovation Expert at Robert Bosch, Bangalore, delivered a talk on "Real-Time Operating System" to the students of B. Tech VI, M. Tech II on February 28, 2022 and March 21, 2022.

11. Dr. Sweta Shah from SVNIT, Surat, delivered a talk on "Satellite Navigation" to the students of B. Tech VI on March 09, 2022.

12. Dr. Raghunath Bhattar, Scientist at SAC, ISRO, delivered a talk on "Advanced error control coding" to the students of B. Tech VI on March 23-24, 2022.

13. Mr. Jignesh Panchal, ASIC/ FPGA Verification Engineer at Arm, Sweden, delivered a talk on "Universal Verification Methodology (UVM)" to the students of B. Tech VI, M. Tech, VLSI sem-II on April 07, 2022.

Publications at the Department

- **Chetna C. Chauhan, Tanuj Gupta,** "Tailoring magnetic and dielectric properties of SrFe12O19/NiFe2O4 ferrite nanocomposites synthesized in presence of Calotropis gigantea (crown) flower extract." Journal of Alloys and Compounds 900 (2022): 163415.

- **Chetna C. Chauhan,** "Overview of recent experimental results from the ADITYA-U tokamak." Nuclear Fusion 62.4 (2022): 042017.

- **Khushboo Sinha, Yogesh N. Trivedi,** "Spectrum sensing techniques based on last status change point estimation for dynamic primary user in Additive Laplacian noise." Wireless Personal Communications 122.3 (2022): 2131-2143.

- **Dilip Kothari,** "Design, development, and qualification tests of prototype two-channel cryogenic temperature transmitter." AIP Advances 12.3 (2022): 035213.

- **Usha Mehta,** "Robust Schmitt Trigger-based Performance Booster Technique for Futuristic On-Chip Graphene Interconnects," SSRG International Journal of Engineering Trends and Technology (2022).

- **Rachna Sharma, Yogesh N. Trivedi,** "Performance analysis of vertical multihop cooperative underwater visible light communication system with imperfect channel state information." Optical Engineering 61.4 (2022): 046106.

- **Chaitanya Chhichhia, Aakarshak Nandwani,** "Performance Analysis of Vertical Underwater Visible Light Communication System with Cross-QAM." 2022 National Conference on Communications (NCC). IEEE, 2022.

- **Akshat Jain, Barun Debnath,** "Underwater Visible Light Vertical Communication for Distinctive Chlorophyll." 2022 IEEE Sponsored Second International Conference on Advances in Electrical, Computing, Communications and Sustainable Technologies (ICAECT 2022).

- **Ayush Mishra,** "Lightweight Cryptography on FPGA," 12th International Conference on Science and Innovative Engineering at Jawahar Engineering College Chennai (2022).

Events by the Department

MATLAB Hackathon

The Department of Electronics and Communication Engineering, Institute of Technology, Nirma University, organized a 48-hour long online event "MATLAB Hackathon", from January 01-03, 2022. This event was coordinated by Prof. Twinkle Bhavsar and Dr. Yogesh Trivedi. The student committee of this Hackathon comprised of eight members: Viraj Mankad, Pallav Rathod, Abhishek Zinzuvadiya, Harsh Panara, Lalit Jetwani, Digivjaysinh Chudasama, Rishita Chaliawala, and Manasi Yadav. A total of 51 teams took part in this event, from various institutes like IIT Guwahati, IIT Indore, MNIT Allahabad, PDPU, LD College of Engineering, etc. The problem statements were released on January 01, 2022 and the final presentations were conducted on January 03, 2022.
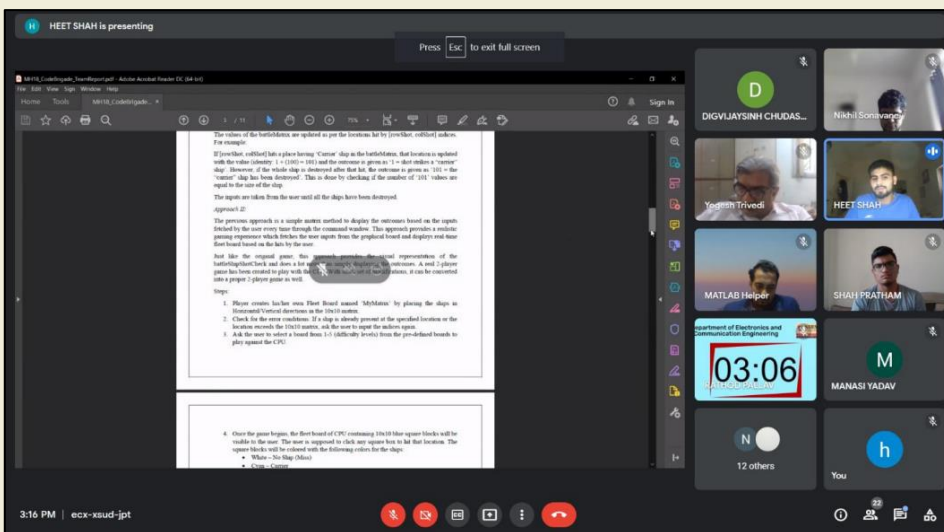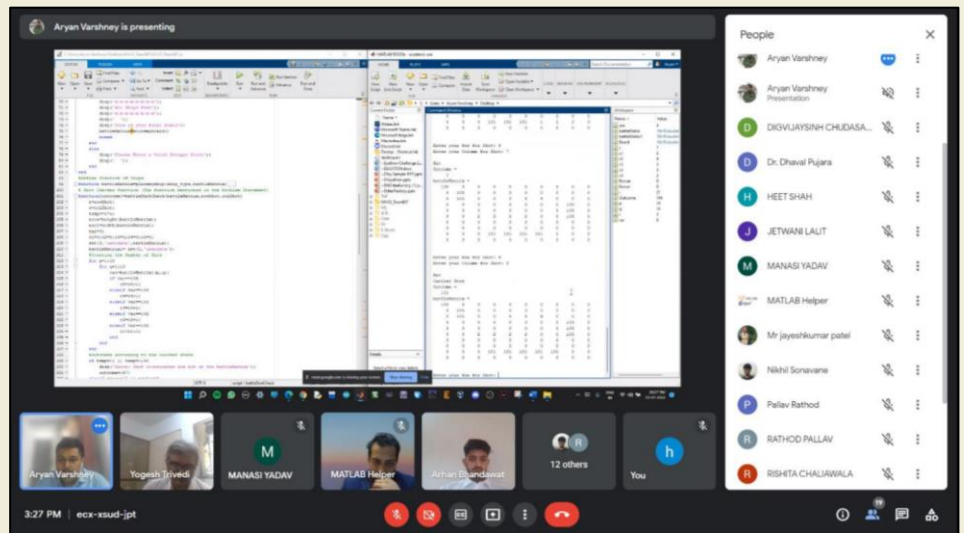
Events by the Department

Training Program for Non-Teaching Staff Members

A three-day training program for the non-teaching staff members of the Institute of Technology, Nirma University was organized by the Department of Electronics and Communication Engineering during January 3-5, 2022. This training program was planned for three days for lab assistants from 09:15 am to 11:30 am. The aim of the training was to demonstrate the current online tools and technology which help them in their day-to-day work. This training program covers the handling of Google workspace (Google forms, spreadsheet, docs) and designing of E-content through (Boucher design, Poster design and Google Website design). Hands-on basic computer networking (LAN, WAN and Switch Configuration) and creating a network between a few PC has been carried out as a part of this training. Basics of MATLAB software have also been demonstrated to the participants. A total of 37 participants have actively participated in this training program. This training program was coordinated by Dr. Dhaval Shah and Dr. Manish Patel. This training program was conducted by Dr. Dhaval Pujara (HOD-EC), Dr. Dhaval Shah, Dr. Manish Patel, Prof. Rutul Patel, Prof. Vaishali Dhare, Prof. Tanuj Gupta, Mr. Praful Joshi (Computer Facility Coordinator) and Mr. Jaimin Joshi (Computer Programmer).

Events by the Department

## Online Orientation Programme for B. Tech. and M. Tech.

The Department of Electronics and Communication Engineering organized a one-day Online Orientation Programme for the students of B. Tech., Semester IV, VI and M. Tech. Semester II. The schedule was prepared at the department level in coordination with Dr. Dhaval Pujara (HOD-EC) and coordinators Dr. Bhupendra Fataniya and Prof. Dipesh Panchal. The orientation program began on January 06, 2022 (09:00 am) with the prayer and welcoming of the students by HOD-EC. The event was attended by all the students and faculty members. The HOD-EC addressed all the students and brief them about the academic disciples and upcoming events in EC Department related to the students. Different guest session followed by and the students attended positively. At the end of the day one session was planned by team ECO under the guidance of Dr. Akash Mecwan to create bonding between the senior and junior students. The team ECO conducted various games, fun activities and group activities to refresh the minds of the audience. Overall, it was great learning by students on the first day of the Semester and motivated by various experts about carrier choice, diversity in job profiles and industrial technology.
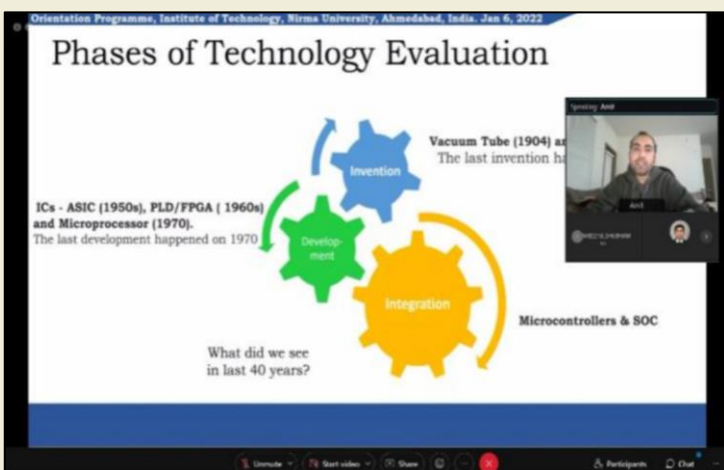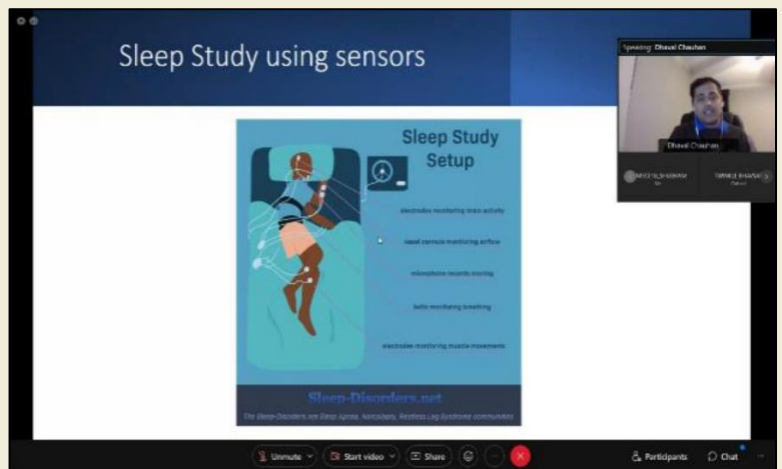
Events by the Department

National Webinar on "Research Avenues in VLSI Design"

The Department of Electronics and Communication Engineering, Institute of Technology, Nirma University has set a trend of organizing various technical events throughout the year. Continuing the tradition, the department came up with a national-level webinar on "Research Avenues in VLSI Design". The webinar has received overwhelming responses from the students, academicians and industry personnel with more than 110 registered participants. Out of the registered participants, more than 50 are from reputed industries and research organizations like SAC – ISRO, eInfochips, Robert Bosch, etc. Researchers from the Florida Atlantic University, BD College of Eng. Pune, LD College of Eng., Ahmedabad, DDIT-Nadiad, and other reputed colleges under GTU have also registered for the webinar.
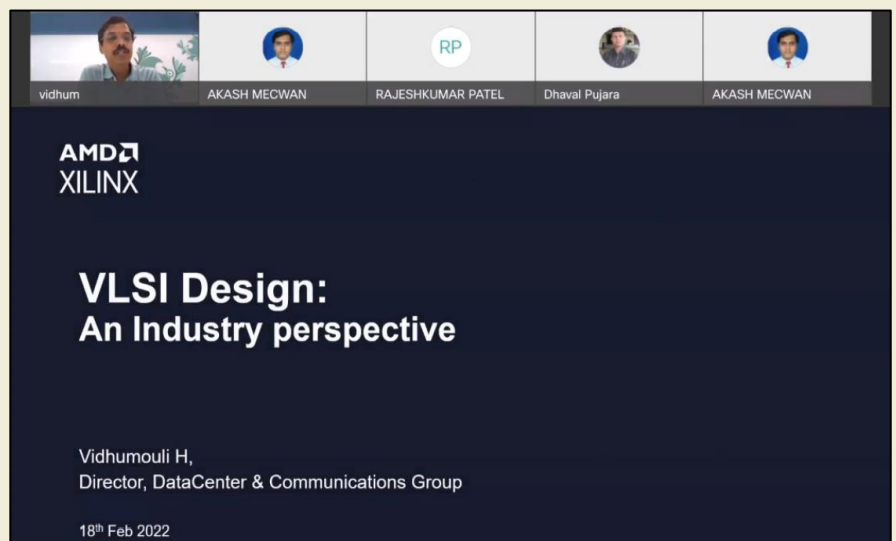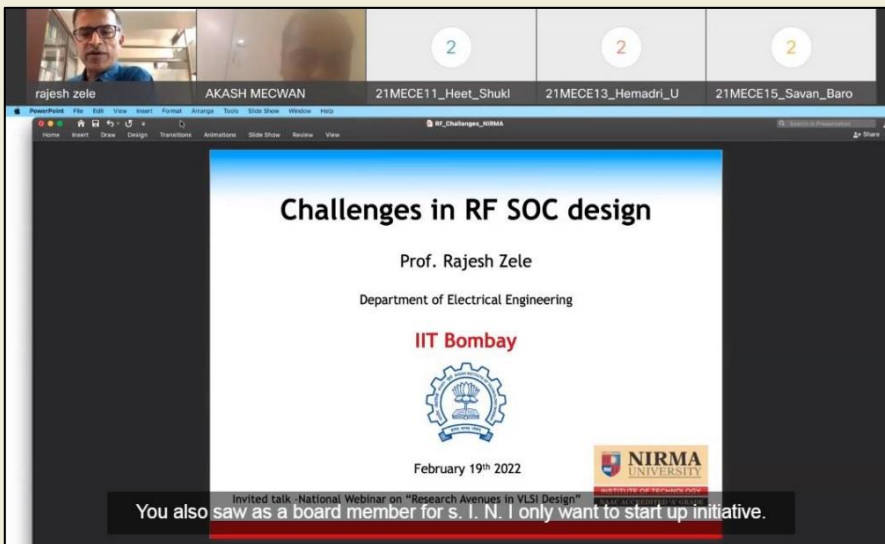
Events by the Department

Industrial Visit
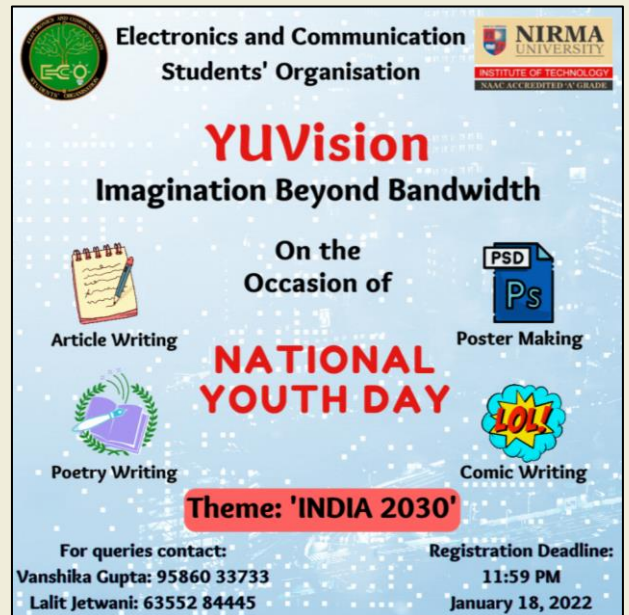
The Department of Electronics and Communication Engineering organized an industrial visit for the students of semester IV and semester VI. The semester IV students were taken to GELCO Electronics Private Limited, Karoli which is an Electrical/Electronics equipment manufacturer and supplier headquartered in Ahmedabad, Gujarat. Students were able to observe and understand the whole manufacturing and packaging process step by step from scratch to finish. The students of semester VI visited eInfochips (An Arrow Company) where they attended a presentation on ASIC design flow followed by a Q/A session. The eInfochips official displayed various products manufactured by the company. The visit was quite informative as it helped students to gain an insight into how an industry works.

Events by the ECO

YUVision - Imagination Beyond Bandwidth

The Electronics and Communication Students' Organisation (ECO) organized an online event named "YUVision-Imagination Beyond Bandwidth" on the occasion of National Youth Day on January 12, 2022. In this event, a cluster of online competitions namely Article Writing, Poster Making, Poetry Writing and Comic Writing were organized. The participants had to select a topic related to the theme "INDIA 2030" and prepare an article, poster, comic, or poetry on their visualization of India in 2030 and how it may be achieved. A total of 12 students participated from the Institute of Technology. The participants were given six days to submit their entries (from 12th to 18th January) through the google form. All the entries were checked for plagiarism. The results were announced via mail and each participant was awarded an E-certificate of Participation and the winners were awarded an E-certificate of Achievement.

Placement Mantra

The Electronics and Communication Students' Organisation (ECO) organized an online event named "Placement Mantra" over four days, from 10:00 am to 11:00 am via Cisco Webex. Over 200 students of Semester IV and Semester VI of the EC Department participated in the session. There were eight speakers who are currently 8th-semester students or Alumni working at well-known companies/research organizations in the field of Tech and Non-Tech. It was an interactive Speaker session that guided the juniors about the placement process, interview experience, and the skills required for the same. It was highly informative and guided the students with the critical perspective to work effectively.

Events by the ECO

Campus Voyage

The Electronics and Communication Students' Organisation (ECO) organized an offline Treasure Hunt competition, "Campus Voyage" on March 22, 2022, from 08:55 am to 11:00 am for all the first-year students of ITNU. Over 200 students from across all the branches of ITNU participated in the event in teams of 2-4 students. The motive of this event was to give the first-year students an exuberant experience to explore the university campus. The event comprised 2 rounds, the Knockout Round and the Final Round. All teams were given placards with clues written on them that lead to the next location and were also given a provision to ask for hints along the way. After the Knockout Round, 10 teams out of over 50 teams qualified for the Final Round. The Final Round was tougher than the Knockout round and had intermediate tasks for teams before handing them the clues for the next location. After 2 hours of an adventurous run, 4 victor teams completed the hunt and were rewarded with Cash Prizes and Vouchers.

Events by the ECO

PCB Design Workshop

The Electronics and Communication Students' Organisation (ECO) conducted a one-day workshop on PCB Design on April 30, 2022 from 09:30 am to 06:30 pm. Over 60 first and second-year students of ITNU actively engaged in the workshop. Mr. Aashay Vasani and team members from PCB Power Market, India's largest online PCB board manufacturing company, led the workshop at Nirma University. It was followed by an industrial visit to the PCB Power Market to help students gain both theoretical and practical expertise.

ECs' Got Talent: Articles

My First Train Journey

I sat on our luggage under the blazing heat of the sun waiting for our train to arrive. The platform was abuzz with life. There were people rushing to catch their train, vendors chanting away in their little shops selling magazines, sweets, snacks and drinks, and then there were kids carrying baskets of the same bargaining with people sitting in what was a long metallic cuboidal tube on wheels or the 'train'. I couldn't help but gawk at it the first time I saw it craning my neck to figure out where it started or ended but was unsuccessful.

Then came a whistle which kept getting louder along with the sound of wheels on the tracks. I marveled as our train rushed in front of me blowing wind through my hair and gradually came to a halt. I got up from my makeshift chair as a man dressed in red tunic and white dhoti came and tied a red cloth on his forehead which I presumed was his own vibranium helmet as he effortlessly lifted our luggage and hurled it on his head. Before boarding the train, I bought comics to keep me entertained during the twelve-hour long journey.

Munmun Sangtani
(Roll No.: 20BEC073)

Once aboard, I took in the floor marked with little diamond shaped patterns. Stink of the toilet made me retch and I scrunched my nose as I entered the cabin. Next, I noticed the blue cushioned benches facing each other, every pair separated by a metallic wall on either side of the aisle. We walked through it to reach our seats and made ourselves comfortable as papa arranged the luggage under our seats. The train started with a jerk and we slowly left our town behind.

I watched the trees pass as a blur enjoying the feel of the wind on my face as I looked out of the barred window. I relished the smell of my new comic book before opening them to dive into the idiosyncrasies of Supandi, the faster than computer brain of Chacha Chaudhary and the adventures of Shikari Shambu. The sky had darkened by the time I was done. That is when we passed city roads that were blocked for our train to go through. I waved cheerfully to the people waiting in their vehicles, some patiently while others honked away.

In our own train, every pair of seats was occupied with different kinds of people. There was a family with a baby that won't stop bawling, an uncle sleeping merrily blessing us with his snores and a group of teenagers playing dumb charades. Everyone enjoyed their own journey on the same train. Maa opened her dabba and the smell of food filled my nostrils and made my stomach grumble with hunger. We ate our meal while playing Antakshari and sang our hearts away.

Papa prepared the berths for sleeping as I had my sweet time playing monkey on the little ladder connecting them. To my dismay, I wasn't 'old enough' for the upper berth, that papa had magically folded out of the metallic wall, and had to sleep on the lowest one. Maa took the one opposite to me and papa got the upper one. I fell asleep to the rhythm of the moving train.

ECs' Got Talent: Articles

My parents woke me up in the middle of the night when our destination was near. The train, again with a whistle, came to a halt. I rubbed the sleep off my eyes as I stepped out on the station similar to the last one yet different in the culture and language used. A man, similarly dressed and with the same superpowers as the red tunic superhuman came and carried our luggage to the taxi. I was groggy with sleep yet excited for the little adventure ahead. But that is a story for another time.

The Future of Supersonic Mobility

"Hyperloop" – This is the way high-speed transportation will be in the future. It's three and a half times faster than Japan's bullet trains and faster than a Boeing 747. It is a sophisticated transportation system that combines the three functions of levitation, guidance, and propulsion. The Hyperloop system is unique in that all existing systems only use two of these functionalities.

In the hyperloop concept, passenger pods travel through pressurized tubes using electric propulsion and magnetic levitation. The pod encounters very little resistance due to propulsion, lack of air pressure, and levitation, allowing it to reach extremely high speeds while using very little energy. The pod travels in a low-pressure tube that is vacuum sealed, allowing land transportation to approach sonic speeds. Because atmospheric pressure restricts object motion, the plan was to remove the air, resulting in a nearly air-free environment and drastically lowering the pressure. As a result, increased air lubrication is possible.

**Aatman patel
(Roll No.: 19BEC091)**

Hyperloop Concept
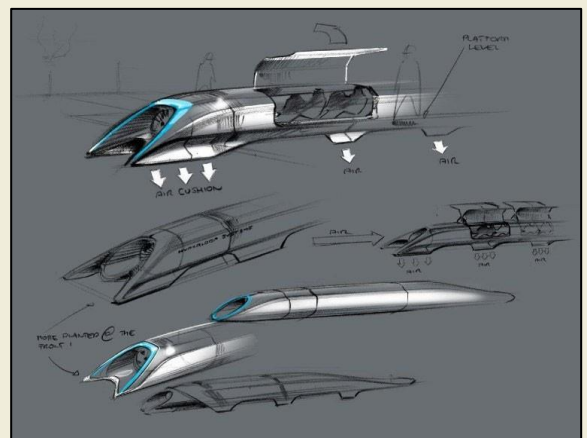
Hyperloop Travel Pod – Breakdown

ECs' Got Talent: Articles

The main components that are responsible for this breakthrough are the Magnets. Passive maglev employs a specific configuration of permanent magnets to generate a constant magnetic current that levitates the pod. Active maglev uses a combination of permanent magnets and electromagnets, with the latter controlling the electric current and its strength. By this the pod lifts up and smoothly glides within the tube without any physical contact to the surroundings at a speed of around 780 mph.

Working and living in two different cities could become the norm, resulting in a world with less congestion and pollution. There are also security concerns with Hyperloop, such as dealing with emergency evacuations, terrorist attacks, natural disasters etc.

Quant Engineer

Munmun Sangtani
(Roll No.: 20BEC073)

Siddharth Agarwal
(Roll No.: 20BEC119)

Through this article I will be talking about Quantitative developers, sometimes called quantitative software engineers, or quant engineers for short. They are the computer specialists that assist, implement and maintain the quantitative models. If you are someone who wants to escape the monotony of work and face new challenges every day, this is the ideal field for you. The average package is quite good ranging from ₹6 to 98 Lakhs with an average annual salary of 22.5 lakhs. It is a somewhat new field but that just makes it an abyss of opportunities.

There are certain skills required to enter this field, like an in depth knowledge of CS Fundamentals along with competitive Programming and fluency with Data Structures and Algorithms, Probability and Statistics, basic knowledge of Machine Learning, Finance and Stock Market for which Zerodha Varsity can be used. If these interest you give quant engineering a try.

There are plenty of possible opportunities as a quant engineer, the most popular of them being: Quant Researcher, who measures the tangible and invisible phenomena using numeric data to analyze in order to draw meaningful and possibly novel conclusions. They generally develop the

algorithm and implement it using python. Then there is the Quant Analyst, a specialist who applies mathematical and statistical methods to financial and risk management problems. You can be a Portfolio Manager who employs quantitative investment strategies to manage the pension funds, retail investors and insurance companies similar to a product manager of a product based company and if you still haven't found your area of interest, there is also a Quant Trader or the specialized traders who apply mathematical and quantitative methods to evaluate financial products or markets.

Like in every other field you have to clear an interview process to become a quant engineer. This consists of two coding rounds and one technical round. In the first coding round you can expect questions related to basic Data Structures and Algorithms, second round is about dynamic programming and then there is the technical round in which the interviewer will check your stress management, calculation skills and other soft skills.

Currently leading investment banks such as Goldman Sachs, Morgan Stanley, JP Morgan and algorithmic trading firms such as De Shaw are actively hiring Quant Engineers.

ECs' Got Talent: Paintings

Krisha Sheth

(20BEC115)

Palak Naik

(20BEC077)
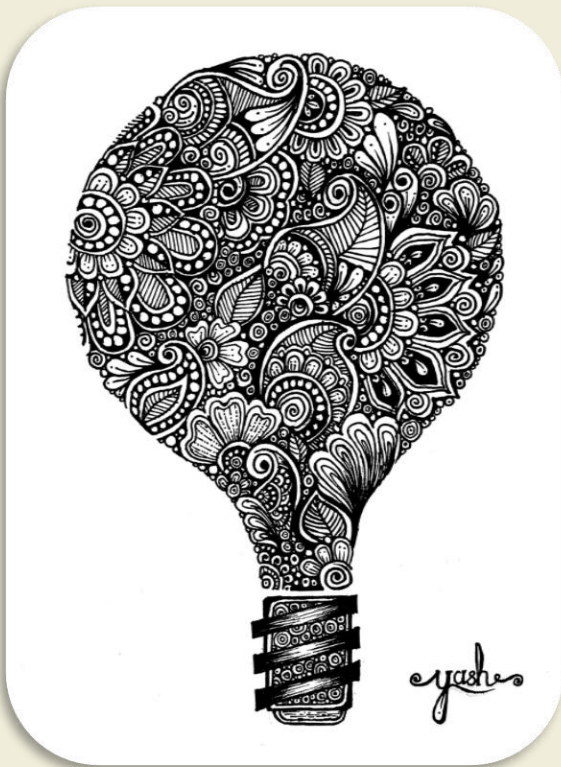
Yash Viradiya

(20BEC135)

Mrudani Hada

(20BEC071)

ECs' Got Talent: Photography
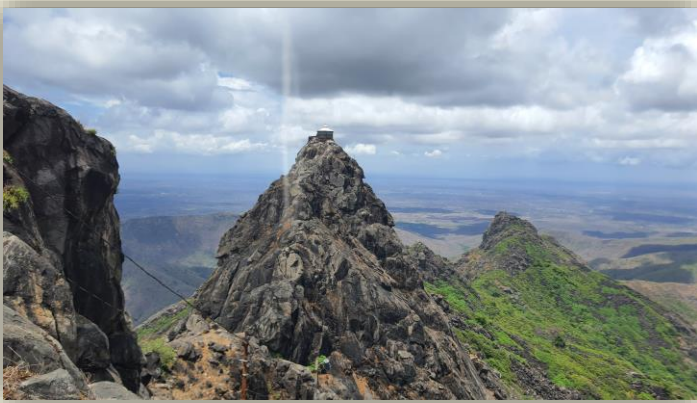
Harsh Chotaliya

(20BEC039)

Krisha Sheth

(20BEC115)

Yash Viradiya

(20BEC135)

Sanchit Sharma

(20BEC108)

ECs' Got Talent: Poetry

Embracing Scars

These scars that you try to hide,

if only embraced with pride,

may bring out your most beautiful side.

And aren't these imperfections that you detest

what make you irreplaceable among everyone else?

Maybe all the beautiful ones out there,

don't even pursue to be the fairest of all,

But love themselves despite their flaws.

Because Afterall,

Aren't broken surfaces what make the hills so captivating?

Aren't disturbances what make the oceans so alluring?

And aren't scattered rays what make the sunsets
mesmerizing?

But if you still want to be flawless somehow,

Haven't you ever wondered how...

Magical are the skies that are adorned by falling stars.

Enchanting are the brooks that flow through crooked paths.

And touching are the rhymes that come from broken hearts.

- Niharika Thakar
(20BEC128)

The Insta - Techies

Follow ECO on Instagram: www.Instagram.com/eco.itnu/

Students' Achievements

1) Dhyanik Pujara (20BEC028), Palak Naik (20BEC077), Harsh Chotaliya (20BEC037), Riya Gautam (20BEC038), Dixit Dudhat (20BEC033) and Maitri Patel (20BEC085) had participated in the college round of Smart India Hackathon organized by E-CELL, Nirma University. They had presented a Hardware Project under the student innovation category. Their emphasis was to build a smart lock which uses face recognition and IoT. Their USP was affordability since their product was 12 times cheaper than those available in the Market. They had bagged first position for the same.

2) Sahaj Soni (20BEC106) secured the Best Delegate Award in the Change Maker's Symposium MUN (Model United Nations) organized by AIESEC in Ahmedabad. He represented the Russian Federation in the United Nations Security Council.

3) Sahaj Soni (20BEC106) and Riththika Sukanandan (20BEC102) were the winners of the Indian Clean Air Challenge organized by Ministry of Housing and Urban Affairs, Government of India (MoHUA). Their startup also received Incubation and a funding of INR 21 Lakhs from Social Alpha, a private startup accelerator based out of Bengaluru. They were invited to present their idea at the Smart City Convention at Surat and received appreciation from Shri Kunal Kumar, Joint Secretary of Ministry of Housing and Urban Affairs (MoHUA), Government of India.

4) Akshat Jain (19BEC007) and Barun Debnath (19BEC022) securing 2nd position with the efforts of his Team Insane_Triad in the online event of MATLAB Hackathon, organized by Department of Electronics and Communication Engineering, Institute of Technology, Nirma University on January 01, 2022 to January 03 , 2022.

5) Mann Raval (19BEC109) and Khush Shah (19BEC120) secured the 3rd position in the "VOIS for Tech Camp 2022" on June 24, 2022.

Anveshan 2022

The students of EC Department have always been known for the zeal and enthusiasm they display in various college events like 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 to students where every student can showcase their hidden talent. The Department of Electronics and Communication Engineering is known for its unveiling of innumerable artistry in different domains and the ever-lasting spirit of the participants. Anveshan had been a hit for the EC 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. The best way in which one can express oneself is via dance and music. EC students gave their wonderful performance in group, couple and solo dance.

Anveshan 2022

EC students played a drama named "Kadam" which was based on the theme of equal opportunity and won the second prize. Many students took part in Treasure Hunt which was the biggest event of Anveshan. Apart from this, the students participated in BGMI, VALORANT, Meme making competition, duet singing competition, Rangoli competition, Fashion show event, instrumental music event, Debate, Extempore and JAM. Besides participating in Anveshan, some of the students were a part of the organizing committee.

Upcoming Events by the ECO

The Electronics and Communication Students' Organisation (ECO) has been actively working for the development of the student community. During the pandemic Situation also, the organization has worked throughout the year for the betterment of the students. In the past, ECO had organized various technical and non-technical events, webinars, interaction sessions with the student community for the overall growth of the students and bringing out the most from them. To continue the tradition of learning and development the team ECO wishes to put forward some tentative Upcoming Events for the students.

Mix and Match

Mix and Match will be an online event for all the first year students and sophomores of the Institute of Technology. It will have two round and one very important workshop regarding the methodology and structure of pitching. 'Benjamin Stacey' a well known expert will come and guide all the participants on how to create an effective pitch deck. In this event participants will have to come up with a new hybrid product that can serve a better purpose. It will be an event which will test the innovative side of entrepreneurship by creating a new useful product by using two already existing products which serve a better purpose.

Code Cook

Code Cook will be an online Coding Event for all the freshers and sophomores of the Institute of Technology. It will be composed of one round only with five to seven questions of different difficulty levels. This will be a great opportunity for all the coding experts of the college to perform their best, use their logic and skills to solve the questions as early as possible. The participants completing all the questions first will be declared as the winner and cash prizes will be awarded to all the winners. This kind of events helps students to understand their competition in a better way and helps them to prepare for placement drives.
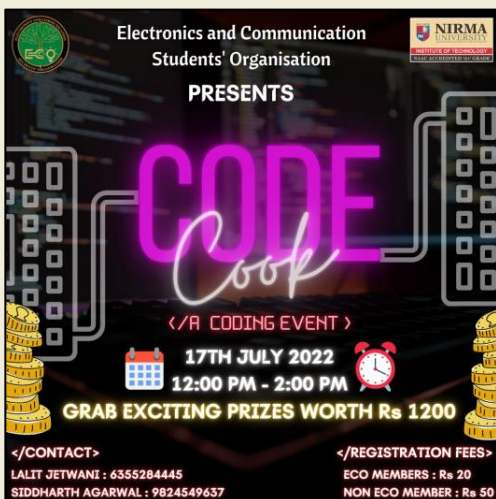
Upcoming Events by the ECO

ECO Day

ECO Day is another flagship event of the Electronics and Communication Students' Organisation (ECO). It will be a 2-3 days long Techno-Management event for all the students of all the universities of India as well as all the faculties of the Nirma University. The ECO Day will be kind of like a fest and the students will decorate the whole campus. The ECO Day will consist of various events like Technical, Non-Technical events as well as workshops and webinars where the students of any discipline irrespective of year of study can participate, enjoy and grow their inner skills.

E-Chess

An Online Chess Tournament will be organized for all the chess experts of the university tentatively in September 2022. The tournament will be held on Lichess or chess.com. This will be an amazing opportunity for all the chess enthusiasts to compete in this tournament and grab amazing cash prizes. Image Source: https://www.pexels.com/search/chess/

Image Courtesy:

Preface - Manav Chokshi (Roll No.: 19BEC068)

Vision & Mission - Manav Chokshi (Roll No.: 19BEC068)

Poetry - Yash Viradiya (Roll No.: 20BEC135)

Back Cover - Maitri Patel (Roll No.: 20BEC085)

ECO Website:

The Electronics and Communication Students' Organisation (ECO) has recently launched its official website which contains details of ECO, glimpses of events, ECO board members, etc. Visit the link to explore more: https://eco-itnu.me/

National Assessment and Accreditation Council Visit

The Nirma University has been re-accredited with an 'A+' grade by the National Assessment and Accreditation Council (NAAC) in the third cycle of re-accreditation on April 5, 2022. The assessment work was conducted as a part of NAAC's periodic evaluation of the higher education institutes and to promote quality teaching, research, and learning in the higher education institutions across the country. Among private universities, Nirma University is the only one to receive an A+ grade in the state of Gujarat until April 2022. The grade is valid for the coming five years.

Department Research Wall

The department's research wall was designed by Palak Kapuriya (20BEC076), Sanchit Sharma (20BEC108), Umang Parmar (20BEC132), Pallav Rathod (19BEC106), and Rutul Gandhi (19BEC033) under the guidance of Prof. Akash Mecwan and Prof. Ruchi Gajjar. It depicts various research facilities, projects, publications, consultancy, training, testing, and funding for projects carried out in the department.

National Assessment and Accreditation Council Visit

## Project Demonstration and Exhibition by EC Students

The students of EC Department from semester IV, VI, and VIII enthusiastically participated in the NAAC Project Exhibition by displaying their various hardware/software projects. The NAAC team was impressed with the projects and asked questions related to it. The Project Exhibition was well coordinated by Prof. Sachin Gajjar Sir and professors of other departments as well.
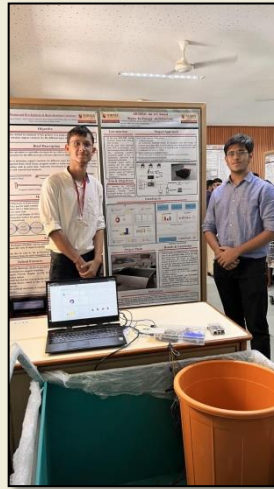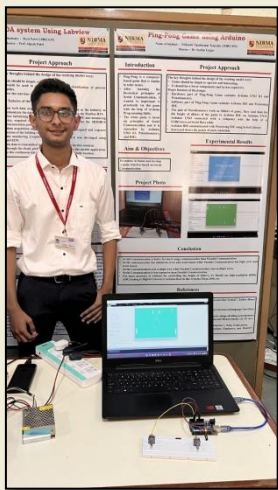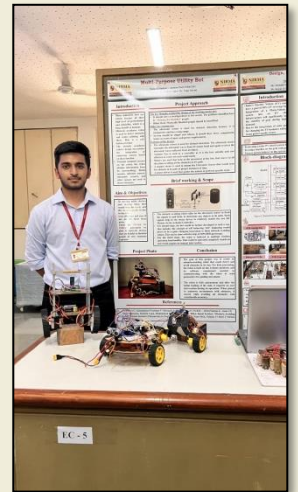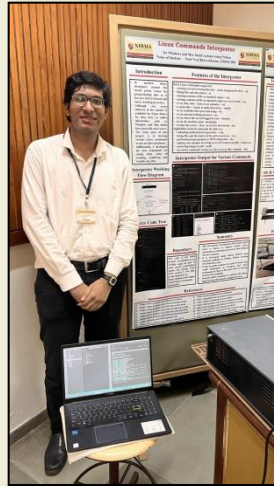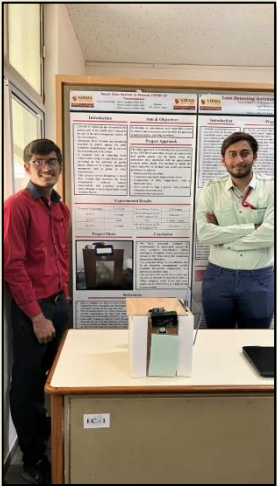
Team ECO 2022

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(19BEC083)
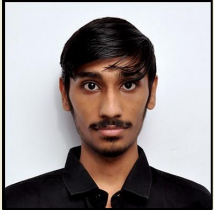
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(19BEC106)

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Naitik Sanghavi
(19BEC118)

Organising Secretary
Anushree Pachegaokar
(19BEC080)

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Harsh Anand
(19BEC010)

Graphics Head
Rutul Gandhi
(19BEC033)

Graphics Head
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(19BEC055)

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Akshat Muke
(19BEC009)

Cultural Head
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(19BEC143)

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(19BEC114)

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Saloni Vaghela
(19BEC142)

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Ketul Mehta
(19BEC053)

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(19BEC113)

Team ECO 2022

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(19BEC006)

Organising Secretary
Abhishek Zinzuvadiya
(19BEC149)
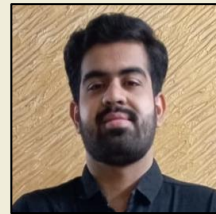
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(19BEC051)

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Editorial Head
Ishika Agarwal
(19BEC041)

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Krishna Thakkar
(19BEC136)

Executive Head
Rinkal Jain
(19BEC111)

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Sneh Kriplani
(19BEC055)

Rutul Gandhi
(19BEC033)

Harsh Anand
(19BEC010)

Pallav Rathod
(19BEC106)

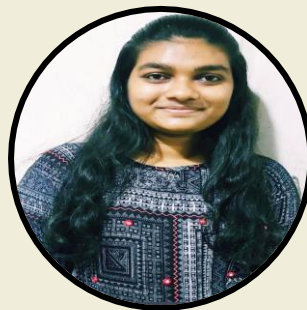Yash Viradiya
(20BEC135)

Palak Kapuriya
(20BEC076)

Siddharth Agarwal
(20BEC119)

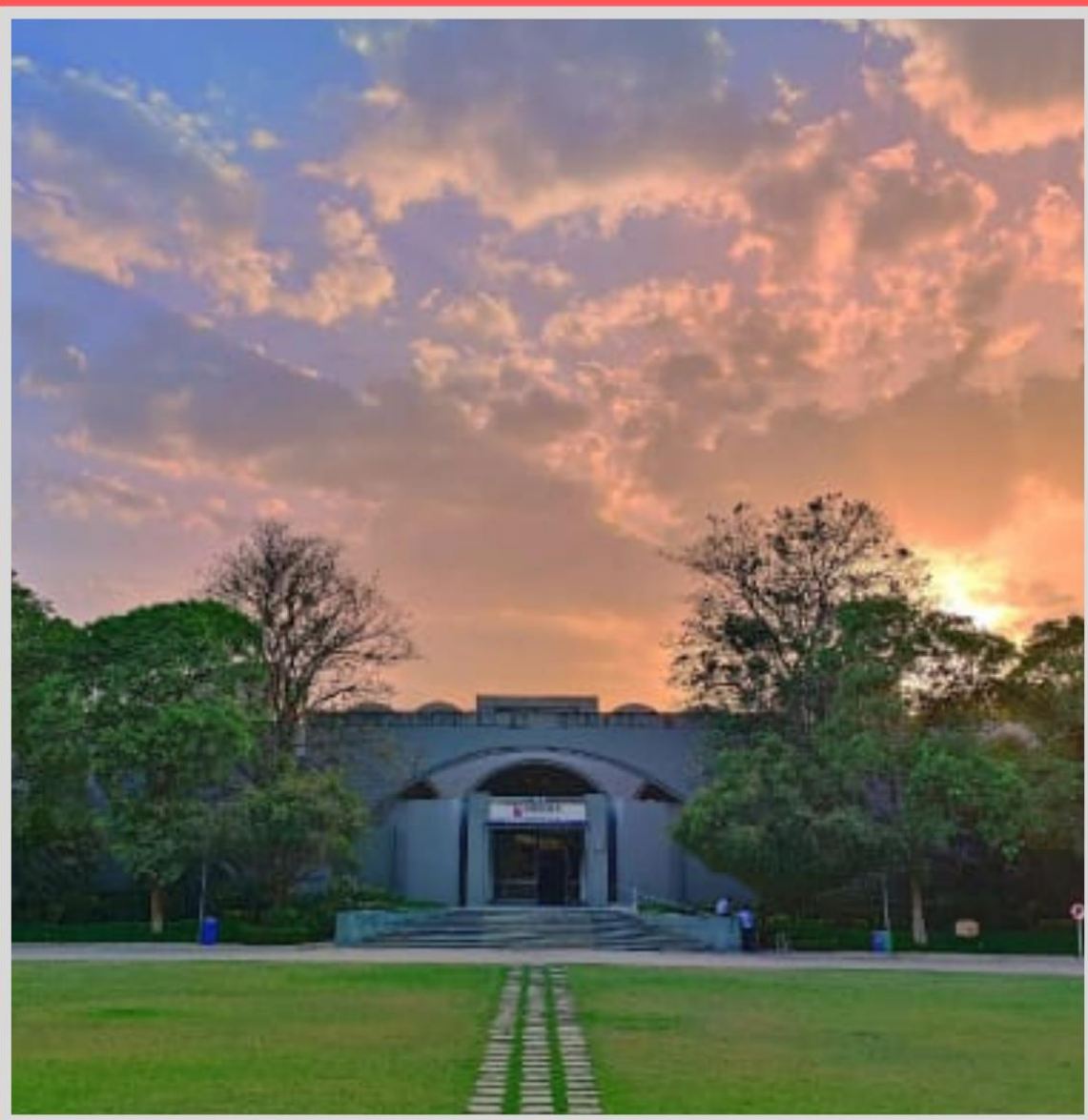Palak Naik
(20BEC077)

Umang Parmar
(20BEC132)

Darshi Khalasi
(20BEC056)

Chinmay Kansara
(19BEC019)

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