TECHNOVA

2021-2022

DEPARTMENTAL MAGAZINE

ELECTRONIC AND TELECOMMUNICATION

About Terna

Terna Public Charitable Trust Terna Engineering College is one of the well- known and finest technical institutions with "A" Grade from Maharashtra Government and having ISO 9001 quality management system and is among top colleges in Mumbai.

Terna offers education in highest quality with its curriculum and presents broad array of exceptional offerings in Engineering and Technology studies. The Department of Electronics & Telecommunication is one of the most reputed in Mumbai University, well known for both its academic excellence and innovative approach. It has been successfully organizing seminars /workshops/industrial visits for the benefit of the students. The faculty forms the nerve of the department. We have a well-trained & highly motivated staff. In addition to the teaching assignments, some faculty members are engaged in research work which is actively supported by the college. Stalwarts from the industry are frequently invited to conduct seminars on various subjects. Our students have won Texas instrument project competition since the last two years. In this competition we were the only college from Mumbai University and among the top 20 institutions in India, including IITs and NITs.

Vision

To Deliver value added quality Education to the aspiring students, meeting stringent requirements of aspiring students, and the changing Technology, Industry, Business and society

Mission

To provide an Environment of Academic Excellence and to adopt appropriate teaching – learning processes to produce competent and skilled Engineers ready to meet global challenges.

Profesional Body of EXTC Department

INSTITUTION OF ELECTRONICS AND TELECOMMUNICATION ENGINEERS (IETE)

The Institution of Electronics and Telecommunication Engineers (IETE) is India's leading recognized professional society devoted to the advancement of science, technology, electronics, telecommunication and information technology. Founded in 1953, it serves more than 70,000+members through 60+ centers/sub centers primarily located in India (3 abroad). The Institution provides leadershipin scientific and technical areasof direct importance to the national development and economy. Association of Indian Universities (AIU), Union Public Service Commission (UPSC) has recognized AMIETE, ALCCS (Advanced Level Course in Computer Science). Government of India has recognized IETE as a Scientific and Industrial Research Organization (SIRO) and notified as an educational institution of national eminence. The IETE focuses on advancement of electronics and telecommunication technology. The IETE conducts and sponsors technical meetings, conferences, symposium, and exhibitions all over India, publishes technical and research journals and provides continuing education as well as career advancement opportunities to its members.

Dr. JYOTHI DIGGE
HOD - EXTC

EXTC Department is known for his technical competency, Research, Co-curricular and extracurricular activities.Dept.is enriched with 7 state of the art laboratories highly qualified and dedicated faculty who upholds the teaching philosophy "stand by the weaker students" to make them par with the gifted ones. Essentially all departmental activities are in -line with our vision and mission. To ascertain this, time and again training programs are organized under EXTC professional body IETE.

Industrial visit is the top agenda which enables the students to get connected with Industries. In order to bridge the gap between the industry and academia, Industry experts are invited to deliver the talk and share their experiences with our students.
Dept. has a "center of Excellence for electromagneitics" modernized by AICTE, wherin PG and PHD students are indulged in cutting edge research.

To top it all, Depaertment has 7 granted patents, many more published. Large contribution of research publication of TEC is from this renowned Department. In a nutshell, every faculty, staff, and students strain their nerve to maintain the glory of this Dept.Since its inception 1992. DEPARTMENT is NBA accredited due to the immense contribution from faculty, staff and students.

Mrs. RUPALI SHEKOKAR
COORDINATOR

Technical magazine is the one of finest way to enhance student's cognition it's understanding and practical applications.

In the role of faculty In - Charge I have always encouraged the students to put forth their ideas. I would also thank the assiduous student members of the committee who are endless making department proud. I'm also thankful to our principal Dr. L.K. Ragha and HOD of Electronics and Telecom. Department Dr. Jyothi Digge for their unconditional support.

EDITORIAL

AYUSH PANDEY
MAGAZINE HEAD

GOPAL CHANDORA
CO-MAGAZINE HEAD

We are thankful and grateful to be part of such amazing Committee and to design the Departmental Magazine. It takes enormous pride in presenting to you the New Edition "TECHNOVA 2021-2022". The main agenda to design the magazine is to showcases the hidden potential and creativity of the students and to encourage them to participate in various technical Activities. The magazine covers various sections like Events, Students Project, Achievements, Faculty

The committee is proud and heartfelt thanks to all those who have contributes to make this effort a success and appreciates everyone's efforts. We hope you enjoy reading this just as much we enjoyed while designing this for each one of you.

Yours truly,
IETE Committee

COMMITTEE MEMBERS

SHRAVAN SHETTY
PRESIDENT

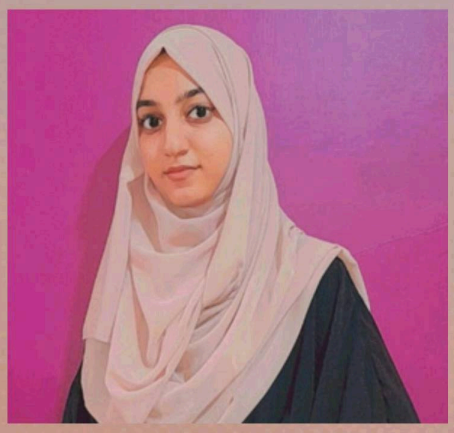
Being the president of the IETE Team was one of the wonderful experience I ever had. It taught me the team work skills, leadership skills and now being in the corporate field, it's really helping me. When I was the president of this team, I had to make it sure that my team is well bonded and it's well functioning. My job was to lead this team, assemble all the members together and discuss about the new objective that we are going to complete. I had to distribute the work among my teammates so that we can achieve our objective on time. As a team, it is necessary for a leader to motivate their team members but for me, that wasn't the case because my team mates were really great and they were always motivated. Even though we distributed our works amongst ourselves, my team mates helped each other's in their assigned job whenever they needed any help. And that's what a Team should really be.

Being part of IETE committee is a great pleasure. I want to thank our coordinator Mrs. Rupali Shekokar Ma'am for guiding and all the members for this journey. This opportunity helps to boost self-confidence and speaking skills. It's an amazing experience working in IETE committee as it enhanced my knowledge and gave me experience of managing events. Working with all the members of IETE committee is an amazing experience as they helped me to grow more in every situation.

Thank You

AMIT SINGH
SECRETARY

COMMITTEE MEMBERS



ZOYA HASWARE
CO-SECRETARY

Co-secretary of the IETE Committee, Zoya Hasware I was a key contributor to the committee that gave me a place to develop my abilities. As co-secretary, I have participated in a variety of tasks, such as working with the president and secretary regarding events and feedback. In addition, I have collaborated with the magazine leaders on the development of the technical magazine Technova. After the event is successfully finished, we prepare a detailed report of it with the help of the other members within two days, and we then conduct feedback analysis on each event.

ARVIND JAISWAL
MEMBERSHIP HEAD

Foremost lots of gratefulness to our IETE coordinator Prof. Rupali Ma'am and past core members for designating me as a membership head of IETE. By joining these councils I learn multiple new skills other than academics like managing tasks, organising events, working in a team and improving myself. It strengthened my self-confidence and I was able to interact with many people and convince them to join IETE. IETE is a platform where each and everyone gains knowledge, learns new skills and welcomes your ideas for development in students as well as IETE. It is been amazing to work with this team and under the guidance of the IETE coordinator.

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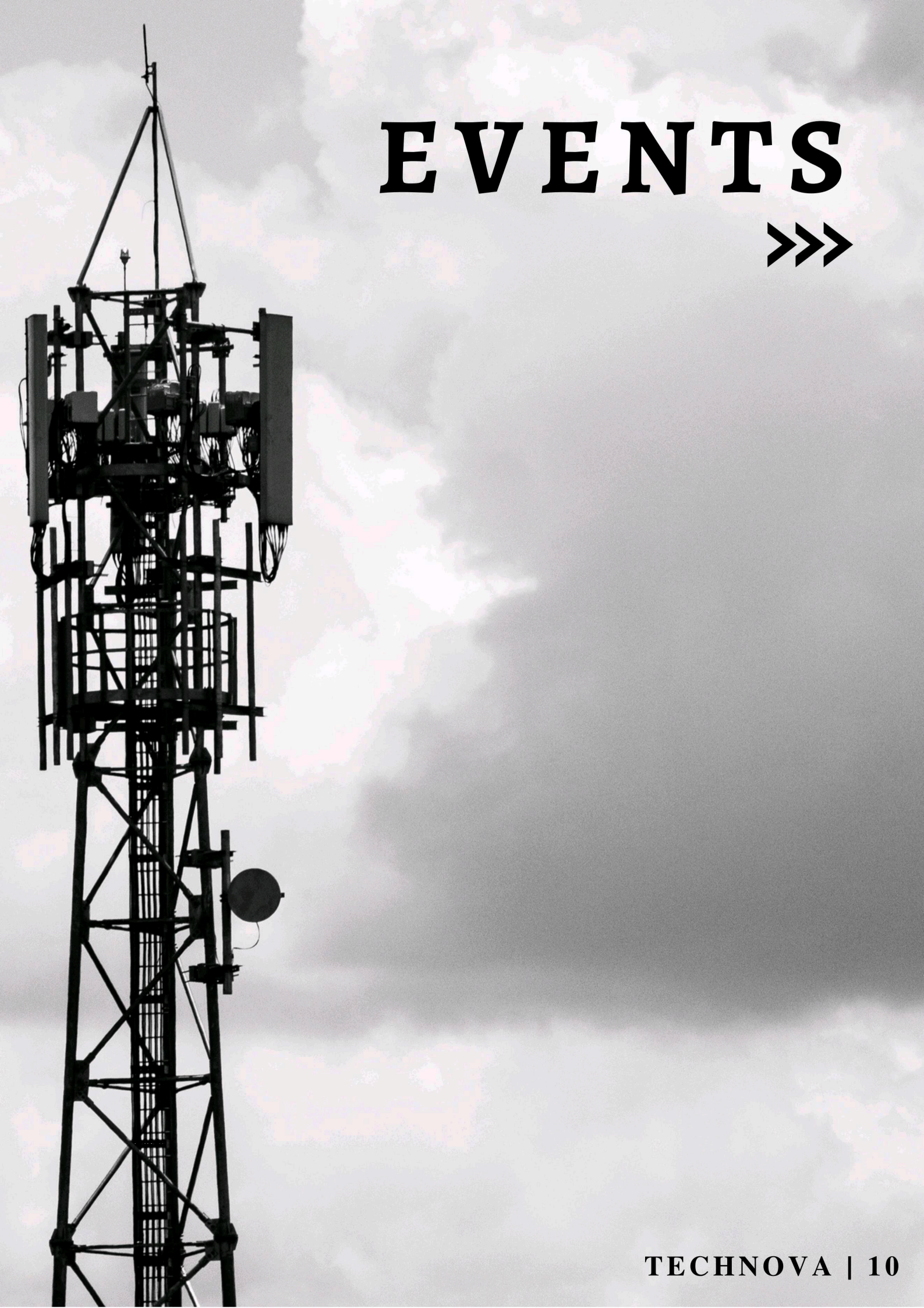
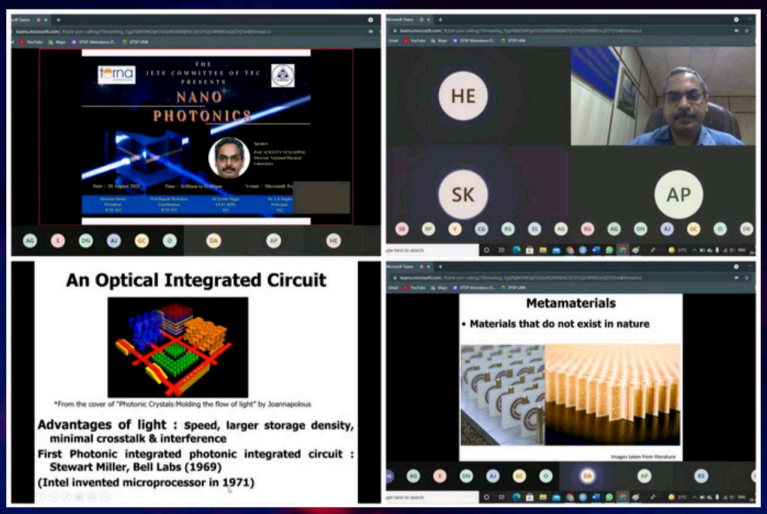
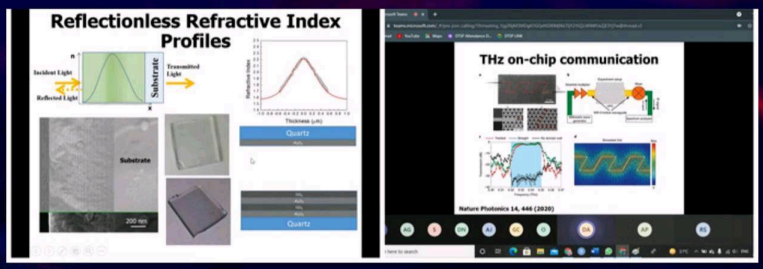


EVENTS

NANO PHOTONICS WEBINAR

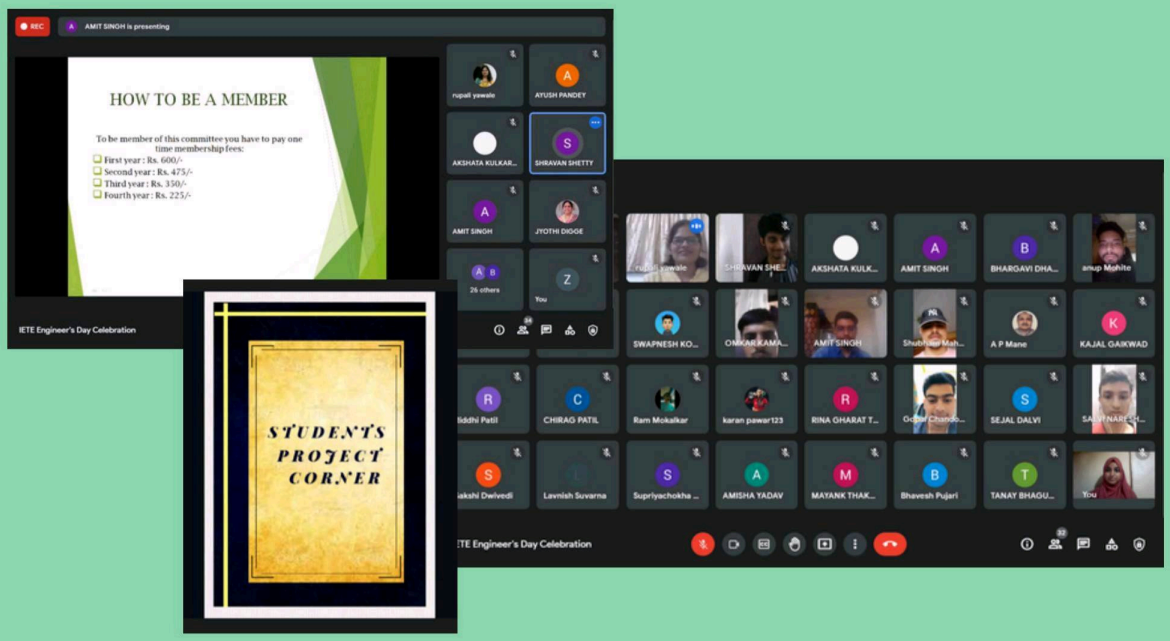
The webinar was started with a warm welcome of honorable Venugopal Achanta sir and our HOD Ma'am by the president of IETE committee Mr. Shravan Shetty and then the speaker Venugopal Achanta sir started their presentation and it was very interesting as we got to know how the photonics world is and how they can be implemented for the benefit of human being. Sir took many important wedges of Nano Photonics; it has bright future in communication and computing in both classical and quantum regimes. Sir also elaborated Light generation, manipulation or control and detection is very important in photonics.





There was almost a count of 80 students including teachers. All of them were interested and it was become an interactive webinar many of them asked different questions to sir regarding Photonics. The webinar was of 1hr and it was concluded by the vote of thanks to all students, teacher and the speaker.

ENGINEER'S DAY CELEBRATION & DEPARTMENTAL MAGAZINE LAUNCH



On the occasion of Engineer's day, inauguration of IETE committee and "TECHNOVA" Departmental Magazine Launch a virtual meeting was held on 15/09/2022 among TE & BE, EXTC students.

The webinar began with a warm welcome from the president of the IETE committee, Mr. Shravan Shetty, to our HOD Ma'am Dr. Jyoti Digge, all the presented faculty members and students for the event. The session started with the inauguration of the IETE committee and the the members of IETE committee.

At the end of the session a Technical Quiz was organized by the committee on technical knowledge and E-Certificates were provided to those students who scored minimum marks of 8 out of 15.

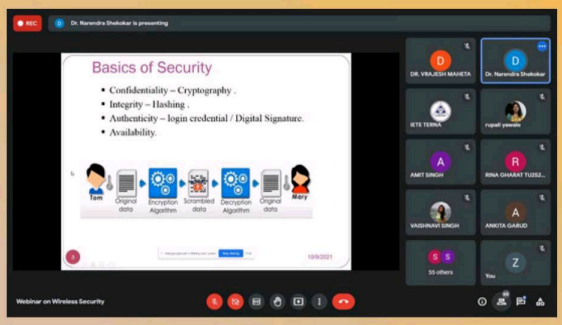
There were almost 35 students including teachers. All of the students attempted the quiz eagerly and the session was concluded by the Secretary Mr. Amit Singh.

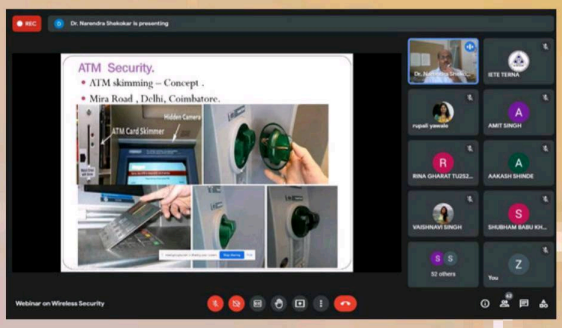
WIRELESS NETWORK SECURITY & CYBER SECURITY

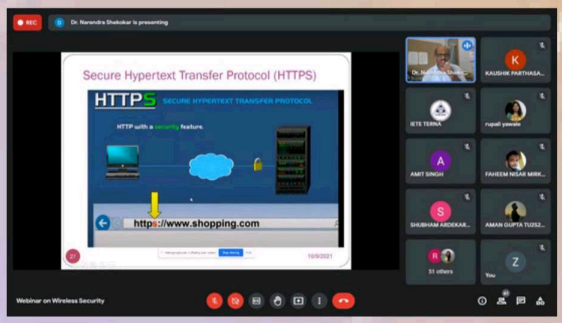
The webinar began with a warm welcome from the president of the IETE committee, Mr. Shravan Shetty, to honourable Dr. Narendra Shekokar sir and our HOD Ma'am, and then the speaker, Narendra Shekokar sir, began his presentation, which was very interactive and focused on increasing knowledge about networking.

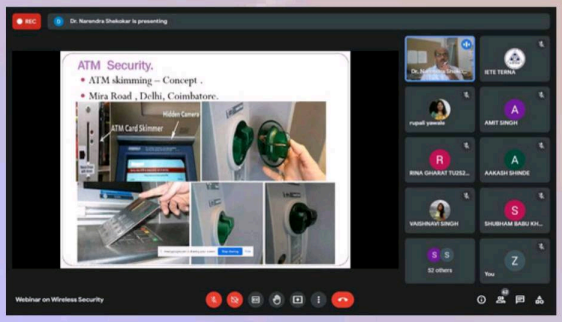
Sir took many important wedges of wireless network security & Cyber Security; He explained about various types of encryptions used in cyber security, there tools and how encryption works. also, he discussed about cyber treads such as ATM security, phishing, sim swap fraud and many more.

There was almost a count of 60 students including teachers. All of them were interested and it was very interactive webinar many of them asked various questions to sir regarding topic which was resolved by sir. The webinar was of 2hr. and it was concluded by the vote of thanks to all students, teachers and the speaker.









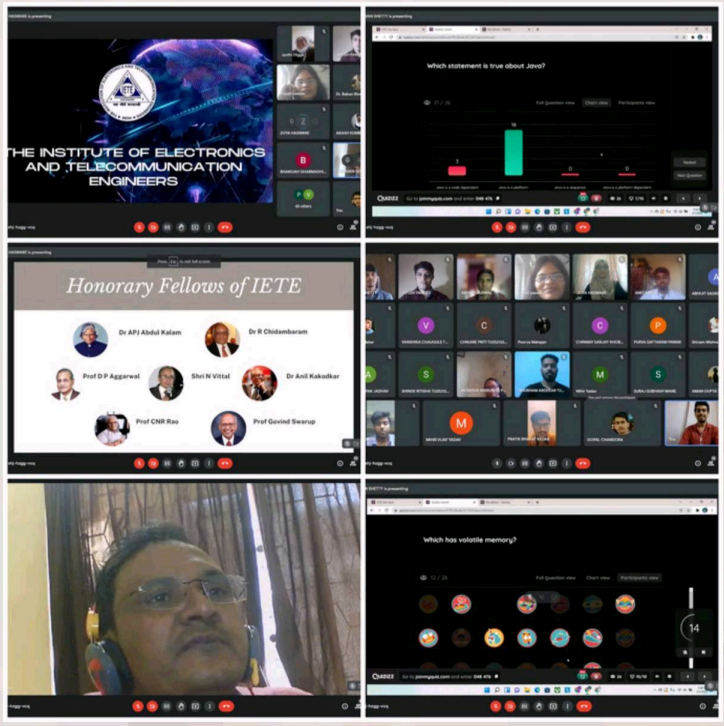
IETE DAY CELEBRATION 2022

On the completion of 69 years of IETE, IETE Terna Engineering College celebrates IETE Day. In the presence of chief Guest Dr. Baban Rindhe, HOD of EXTC Dr. Jyothi Digge, IETE Coordinator Mrs. Rupali Shekokar and students of SE, TE & BE of EXTC.

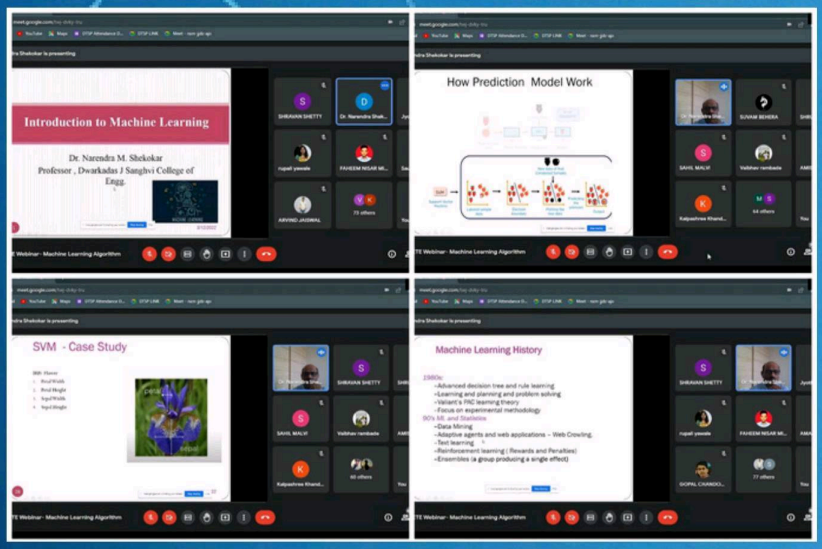
The Event was hosted by Mr. Ayush Pandey. A brief introduction of IETE committee of TEC was given by Mr. Shravan Shetty and Mr. Arvind Jaiswal.

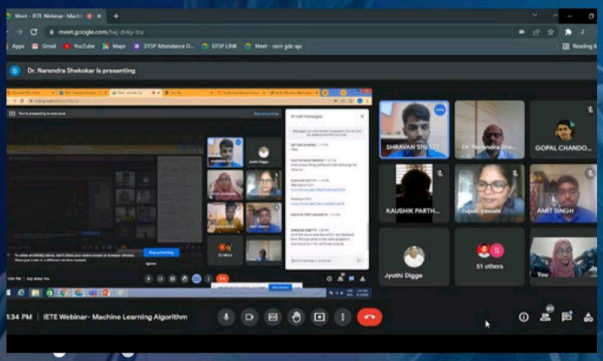
Dr. Baban Rindhe explained all about IETE, and its scope in the future. Dr. Jyothi Digge also encouraged and inspired all students for joining IETE committee. Afterwards

A live technical quiz was organized for all the participating students. Everyone's exuberance made the event memorable. Mrs. Rupali Shekokar spoke a few words in the conclusion to



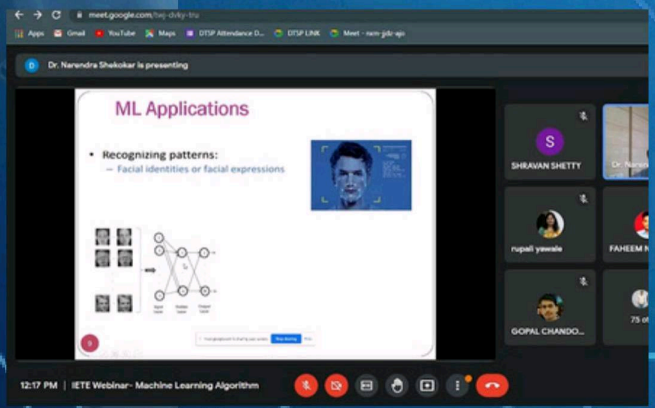
MACHINE LEARNING ALGORITHMS



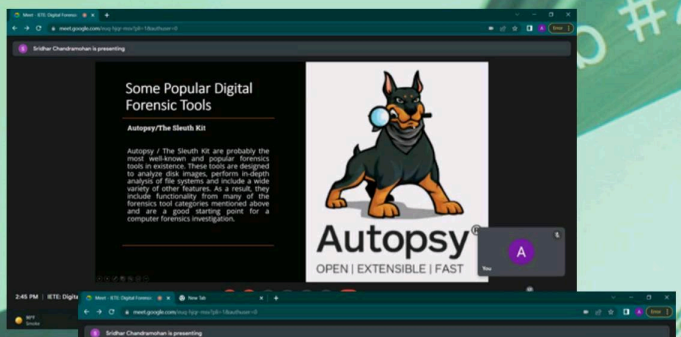


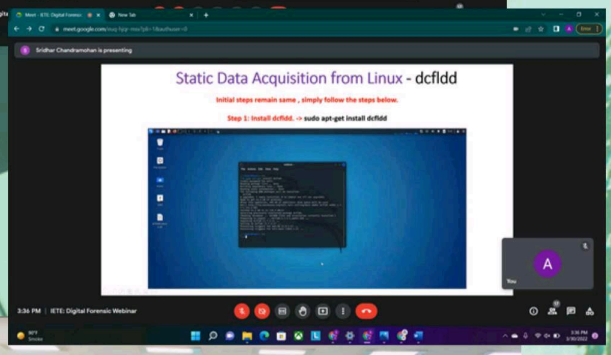
On March 12th, 2022, from 11:30 PM to 1:30 PM at IETE Terna Engineering College, Dr. Narendra Shekokar, Professor, DJ Sanghvi College of Engineering, held a webinar on Machine Learning Algorithms. He was received by Mr. Shravan Shetty, the president of IETE, and Mrs. Rupali Shekokar, the IETE coordinator.

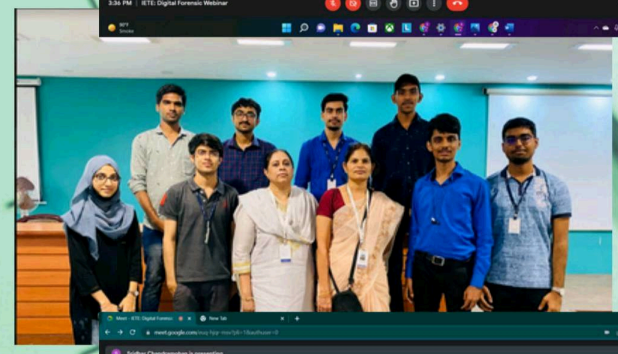
He went through Machine Learning, its applications, and some of its algorithms for supervised and unsupervised learning, as well as prediction models. Around 80+ people participated in the webinar and interacted with Sir. The students' corner had a number of questions, and I addressed all of them. With a thank you note, the IETE President concluded the webinar.

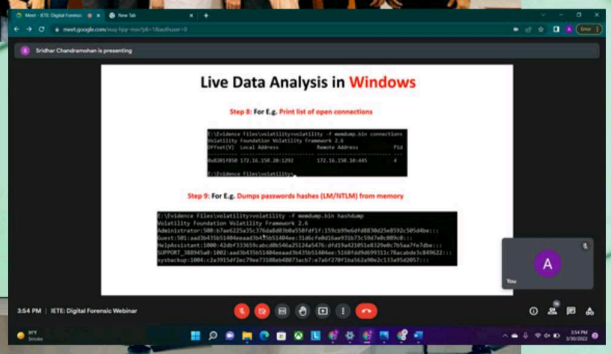


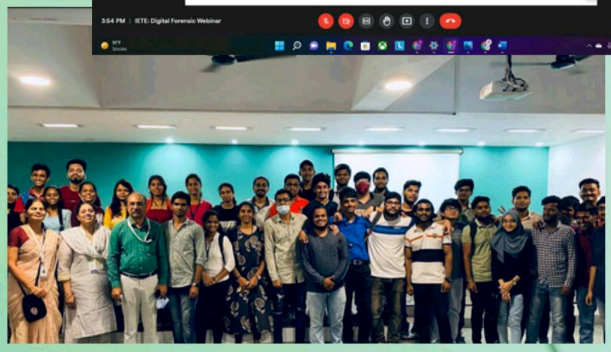
WEBINAR ON DIGITAL FORENSIC











A webinar on Digital Forensic was organized on 30th march2022 for TE and BE students of EXTC branch. The seminar commenced with the welcome speech by Mr. Shravan Shetty, the president of the IETE committee, to honourable Prof. Sridhar Iyer Sir . This session is done under guidance of Dr. Jyothi Digge, HOD EXTC and Prof. Rupali Shekokar, IETE Coordinator, EXTC.

The session was handed over to the prof Sridhar Iyer sir who is the assistant Professor at DJ Sanghvi College of Engineering. The meeting has been separated into three sections by Sir. In the first segment, he discussed the phases of digital forensics, in the second section he reviewed forensic data aquisition. He presented forensic analysis in the third section.

Around 30 students anttended the webinar, it was a highly interactive webinar in which several of them asked sir a variety of questions about the subject. The session ended with vote of thanks from by President Mr. Shravan Shetty.

TOPPERS

SE YEAR

MS. RITISHA SHINDE

POINTER: 9.33

MS. MONISHA PAL

POINTER: 9.25

TE YEAR

MS. AMISHA YADAV

POINTER: 8.99

MS. LAXMI SHIRGIRI

POINTER: 8.91

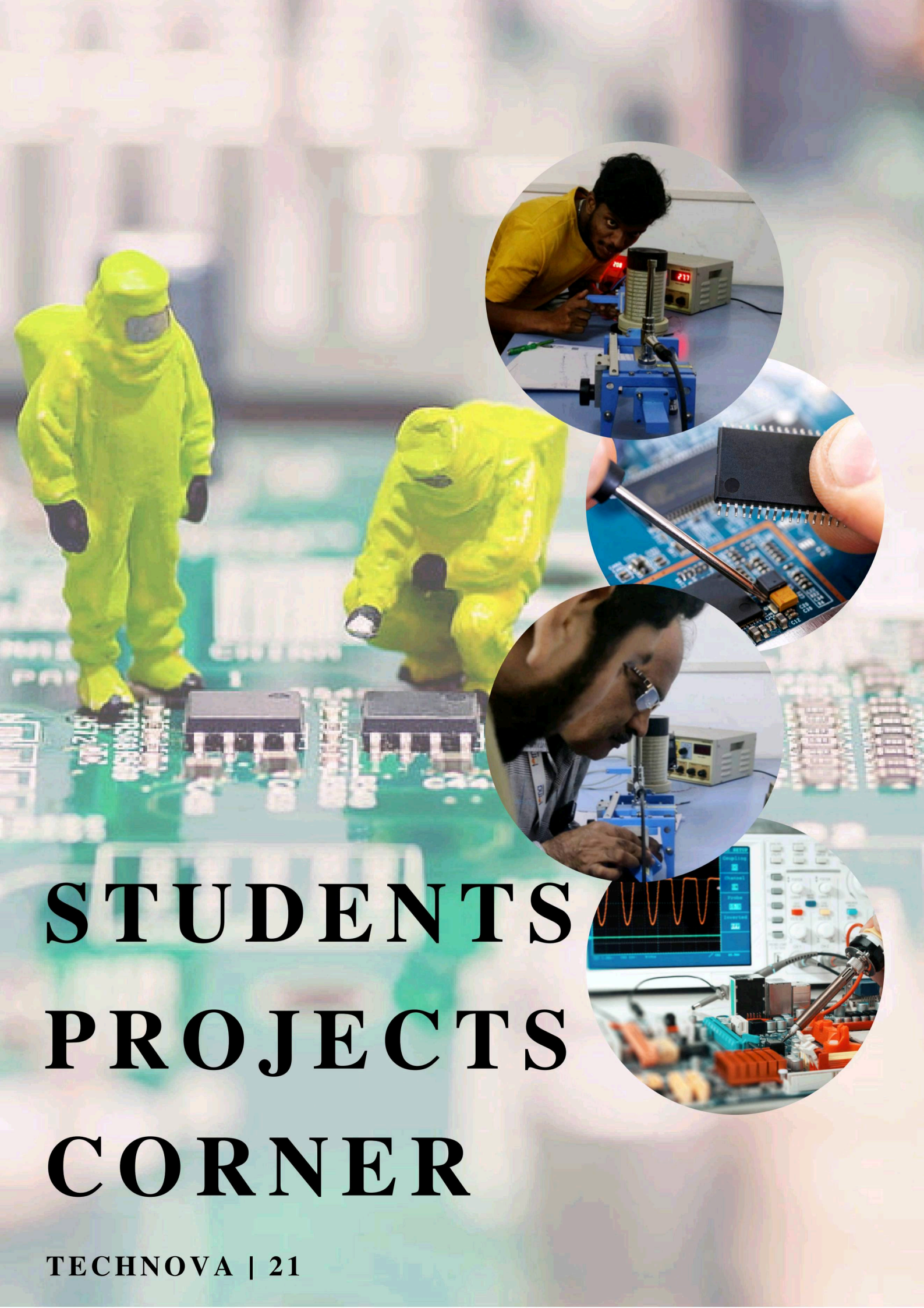
BE YEAR

MR. NANAWARE DHANANJAY

POINTER: 9.15

MS. PATIL SHRUTI

POINTER: 8.95



STUDENTS PROJECTS CORNER

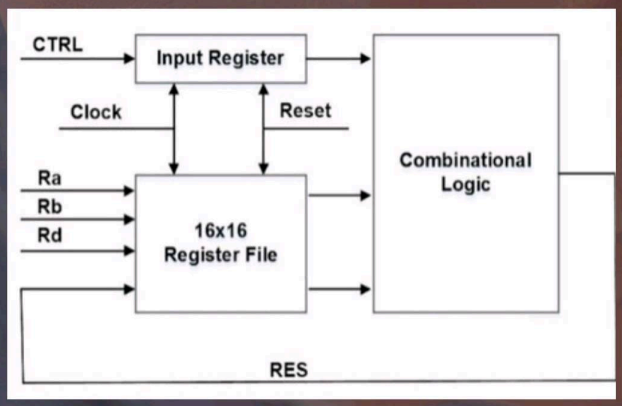
CRYPTOGRAPHIC COPROCESSOR

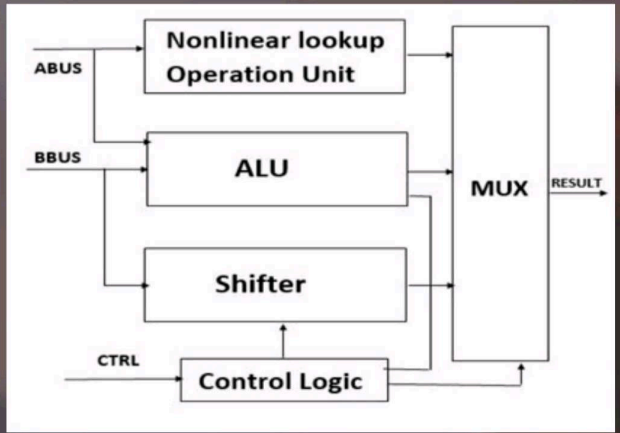
VANSHIKA CHAUGULE

SHUBHAM AMALE

SHITAL KARANDE

SHUBHAM KHARE





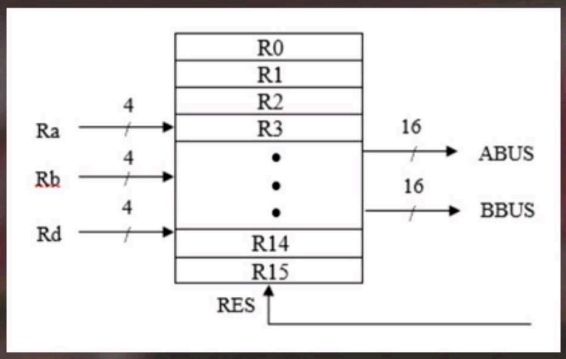
The purpose of this project is to design the hardware of the cryptographic coprocessor by using Verilog Hardware Description Language (HDL). Cryptographic coprocessors have been widely used to offload the compute-intensive cryptography tasks from the main processor due to its performance and efficiency compared to the pure software solution.

The proposed coprocessor comprises an input register, 16x16 register files, instruction decoder, control unit, arithmetic logic unit (ALU) and the hashing unit. The hashing unit is implemented using a non-linear look-up table (LUT). The instruction set architecture consists of 12 instructions that execute independently from the main processor. The 16-bit hash circuit provides a faster way of implementing a hash function for any cryptographic algorithms as compared to software implementation.

The design is simulated to verify the functionality of the proposed instruction set architecture using the Field Programmable Gate-Array (FPGA). Simulation results show that the proposed cryptographic coprocessor produces the correct outputs as in specifications.

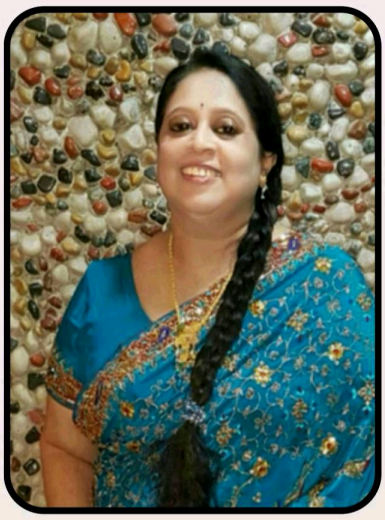
Code (binary)	Operation
0000	ADD : ALUOUT ← ABUS + BBUS
0001	SUB : ALUOUT ← ABUS - BBUS
0010	AND : ALUOUT ← ABUS & BBUS
0011	OR : ALUOUT ← ABUS | BBUS
0100	XOR : ALUOUT ← ABUS ^ BBUS
0101	NOT : ALUOUT ← ~ABUS
0110	MOV : ALUOUT ← ABUS
0111	NOP : No Operation

Hardware module that includes a processor specialized for encryption and related processing. Such devices are built with numerous protections features that prevent unauthorized retrieval of data as well as from having their circuits reverse engineered. A cryptographic coprocessor may provide only encryption, or it may include certain transaction processing. For example, a smart card coprocessor includes smart card functions in order to house them in the same protective environment as the encryption algorithm.



ACHIEVEMENTS

ADAVANCES IN OPTICS AND PHOTONICS

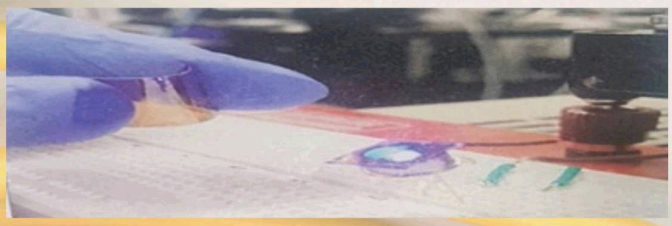


Dr. JYOTHI DIGGE

HOD - EXTC

Nanotechnology is one of the frontier areas of research wherein manipulation of atoms and molecules are delt. Its an advanced technology not only catering to biomedical field but also electronics and computer engineering. Nanomaterials such as quantum dots are developed for drug delivery, Gene therapy, medical diagnostics etc.

QDs for mobile applications



Quantum Dots to illuminate IR

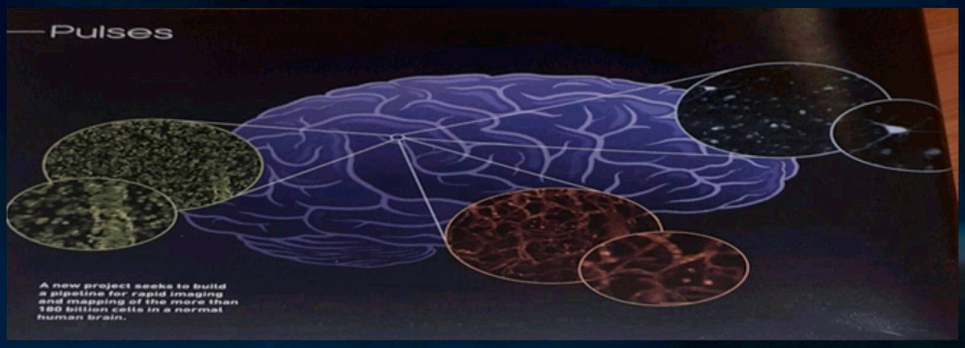
Infrared spectrometers integrated into smart phones could potentially enable no of mobile applications. Recently ICFO team made a solid-state thin films comprising of three layers of lead sulphide quantum dots. In each layer one of the three light emitting quantum dots along with fourth smaller dot designed to absorb light at 0.7μ they laid the layers on a flexible plastic substrate to a commercial LED with an output at 0.6μm.

NANO SILICA GELS FOR MOISTURE DETECTION

Macro photo of indicative silica gels. As the Gel absorbs moisture from the air ,cobalt chloride crystals turns from blue to pink.

Macro photo of cobalt chloride embedded silica gel

Edible florescent tags for tele medication



3D Imaging of Human brain for analysing every cell

Human brain comprises of 180 billion cells. Its much more complex than the mice brain. Mapping of the detailed structure and organization of the tangle of cells in normal human brains -a potential boon for studies of behaviour, cognition and neurogenerative diseases. Mapping of the brain cells using 3D Imaging is shown in Fig

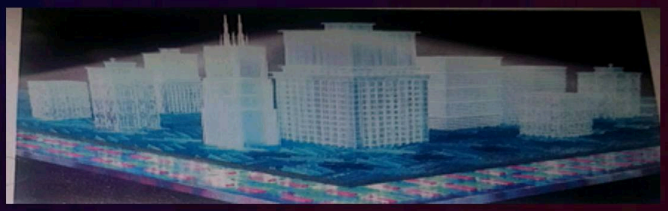
Closer Eye on crops

Emerging technology to monitor and manage frost damage to the crops is essentially a herculean task. This is being eased by the Australian scientists.They have proved that a change in one degree temperature results in 10% of frost damage to the crops.Thats why researchers have enlisted THz imaging as a non-destructive means of screening to identify the frost damage and to fix it.

Barley crop monitoring using 275 GHz IR torch

Team analysed the barley samples ,using vector Network Analyzer they took transmission and reflection measurement at 275GHz.A Test method is depicted in Fig

Flat Lenses for Glasses-Free 3D Display



Glass-Free 3D Display with Flat lenses

Researchers have built glass free 3D display. This s a latest display technology. This display facilitates 3D viewing with wide viewing angle. The researchers have designed lens with an optimized circular sawtooth relief profile and fabricated by patterning the corresponding microstructure onto a flat surface.In the device multiple inter twined lenses combine to form a so called modulator(Bcz this effect is similar to the modulator).Modulator is an Optical component that creates the various perspectives for a scene in a vector light display. The upcoming glass free 3D display is shown in Fig.3

Edible florescent tags for tele medication

The rise of online pharmacies has greatly has greatly exacerbated the problem of counterfeit medications which pose a danger to patients.To combat this problem Scientist from America and Republic Korea have edible florescent tags.These tags are made up of genetically engineered silk worms proteins.These silk proteins are applied on 9mm wide film of non-florescent white silk in the form of 7X7 grid to act as a matrix code to represent and store information about the tagged item.Finally, the tags were integrated into medicines having both pill and liquid forms.These tags features the mobile app readable matrix code ,A consumer can use the smart phone to complete the authentication.These tags are cyan,green and red florescent proteins.

Green Silkworm edible protein added in the medicine

CONGRATULATION!!!

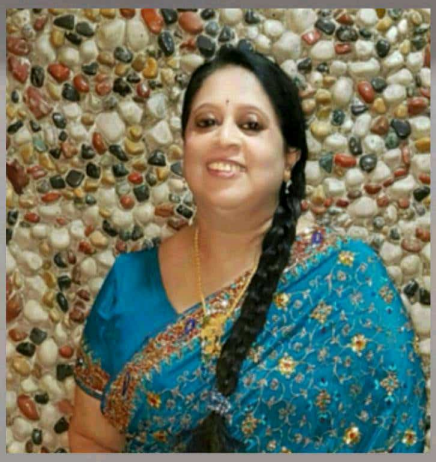
MISS AASTHA DHANANJAY CHAUDHARI

Second year (EXTC) bagged Gold medal in Taekwondo at the intercollegiate taekwondo Thane zone. The competition was conducted by University of Mumbai on 25th September 2022.

MR. SAQLAIN AFTAB

for achieving the RANK-4 at 81 Kg body weight category in University Level weightlifting Competition 2022-2023.

Faculty CORNER



Dr. Digge Jyoti Jayaraj
HOD, EXTC
Professor

Dr. Kharche Shilpa
Uday
Professor

Dr.Gupta Rajiv Kumar
Professor

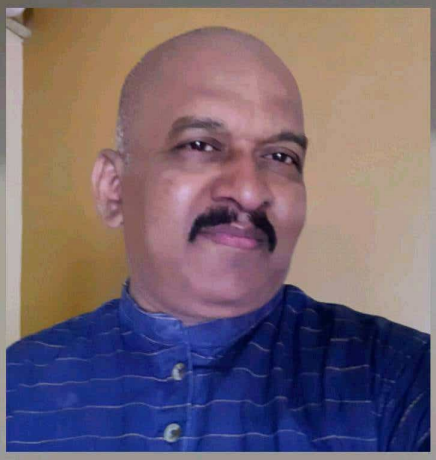
Dr. Manmohan Singh
Bhatia
Professor

Mr. Shelkikar Ravindra
Pralahadrao
Associate Professor

Mr. Dere Pravin
Uttamrao
Assistant Professor

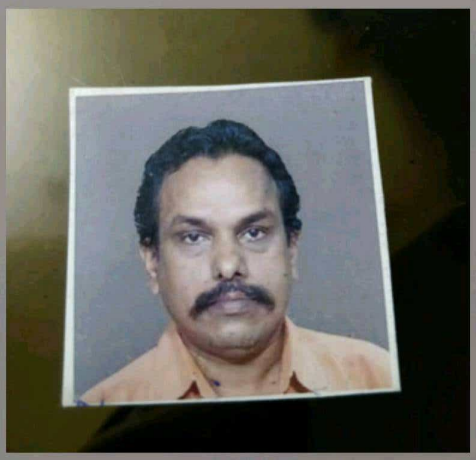
Mr. Kadam Mahesh
Murlidar
Assistant Professor

Mr. Chede VinodKumar
Sukhdeorao
Assistant Professor

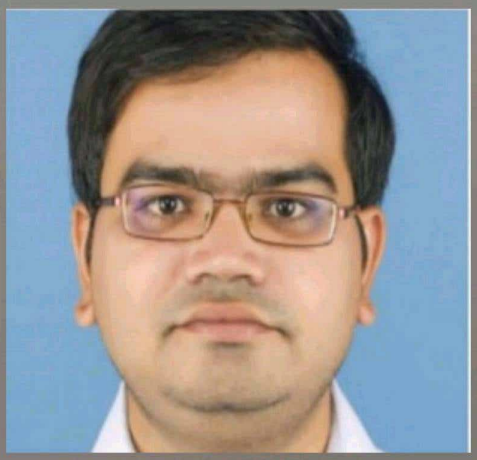


Mr. Kurule Deepak Shankarrao
Assistant Professor

Mrs. Shekokar Rupali Narendra
Assistant Professor



Mr. Moon Vilas Nathaji
Assistant Professor

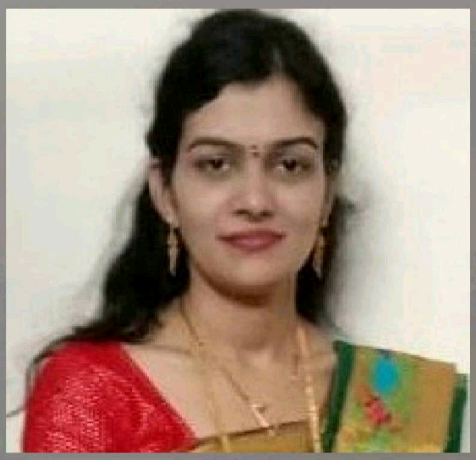


Dr. Trimukhe Mahadu Annarao
Associate Professor

Mr. Mane Ashok Pundlik
Assistant Professor

Mr. Kadam Atul Shivajrao
Assistant Professor

Mr. Koli Virendra Ramesh
Assistant Professor



Mrs. Rochkari Anjali Durgada
Assistant Professor

Mr. Tejpal Saurabh Avinash
Assistant Professor

Mr. Yadav Vijaypal Rajansingh
Assistant Professor