# TECHNOVA

# EXTC Departmental Magazine 2020-2021

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.

## MISSION :

To create self-motivated quality Engineers and technocrats to contribute effectively to value-based society and in the field of science and technology.

## VISION :

To catalyze and inspire young minds for innovative thinking & creativity and to acquire knowledge and professional ethics essential for facing global challenges in rapidly changing technologies to serve the society and industry effectively.

# 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.

# FROM THE MENTOR'S DESK

**Dr. JYOTHI DIGGE**
**HOD, ELECTRONICS AND TELECOMMUNICATION**

Endorsement of students for their overall development through education is our cherished motto. Today education means much more than just acquiring knowledge. From chalkboards to whiteboards and now to smart boards, technology has become our main source of research, knowledge, and teaching. I am proud of being a part of such a beautiful institution dedicated to the causes of better India. Through education and endorsement let's give our best for the overall development of EXTC Department as well as our institute.

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.

**PROF. RUPALI SHEKOKAR**
**FACULTY IN-CHARGE**

# EDITORIAL

We, the editors of (EXTC) Department magazine, take enormous pride in presenting to you the Electronics and Telecommunications departmental magazine TECHNOVA 2020-2021 edition. The main motive of this magazine is to showcase the hidden potential within the students and to encourage them to participate in various technical Activities. The department leaves no stone unturned in making students well versed with the current trends in technology and this magazine further endorses it.

AYUSH PANDEY
MAGAZINE HEAD

GOPAL CHANDORA
CO-MAGAZINE HEAD

I am Heartly thankful to Prof. Rupali Shekokar ma'am and the last year committee members for selecting me for such a post. It is a opportunity to be a part of such a energetic committee. I am developing some skills under this committee that hiw to manage, conduct and work in team this all development will help in in many fields in life. The constant guidance and support of Committee gives us motivation for conducting various activities throughout the year. We hope you enjoy reading the jounery as we enjoyed while making it.

Thank you

# IETE COMMITTEE MEMBERS 2020-2021

**SHRAVAN SHETTY**
**PRESIDENT**

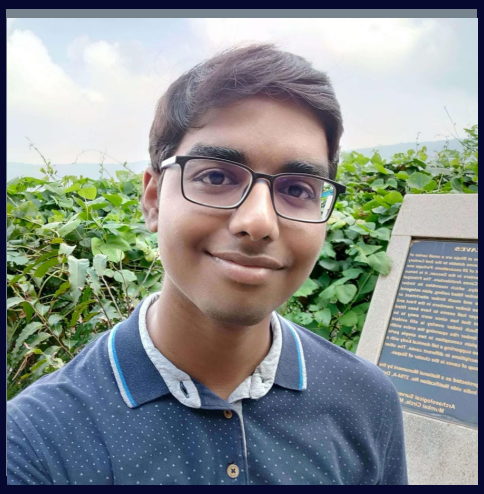
Its a matter of pride to pen down the message for magazine "TECHNOVA" of EXTC Department.
Its an honor to me to serve as the president of IETE Terna. We as a team are committed with the aim to introduce Students with new technologies in their branch and amplify their interests in it which will benefit them in future. Being the president of IETE, its always my duty to lead my team and tackle any situations as a leader.
Taking this opportunity, I would like to thank our co-ordinator Prof. Rupali Shekokar ma'am for being our guide and also thanks to Department of EXTC for supporting us. With your support and IETE team's co operation, we will succeed in fulfilling our aim.

Thank you.

My journey at this committee began with a responsibility of this post and more than that about how will I bring credit to it , what helped me most through it were the seniors who guided me about my tasks and explained me things making it a lot easier for me throughout , we as a team organised events and conducted them successfully in our time with the committee , a huge part of this goes in thanking our cordinator maam prof Rupali Yewale who stood with us guiding us in every aspect and my team mates who conducted them and made it succeed, looking forward to bringing many more such events and success to the name of our team .
Thank you.

**OMKAR GHADIGAONKAR**
**TREASURER**

It's my pleasure to give the message for the 'Technova' Magazine. The secretary post provided me an excellent opportunity to understand the mechanisms of a committee, how various challenges are prevailed over through skills, expertise and experience. It boosted my various skills and improved leadership. The IETE committee is a great platform to nurture and showcase one's talent. It enhances one's personality and provides many opportunities for career advancement.I would like to thank our coordinator Prof. Rupali Shekokar ma'am. Your kind words, guidance, and encouragement mean a lot to us. The IETE committee always strives for excellence and will continue to be a force for professional as well as social growth. Thank you



**AMIT SINGH**
**SECRETARY**

**ZOYA HASWARE**
**CO-SECRETARY**

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

**ARVIND JAISWAL**
**MEMBERSHIP HEAD**

Being a part of this committee I learned a lot apart from engineering like organizing events, managing tasks. After a wonderful interview with seniors and coordinator Rupali ma'am I was selected for membership head. They guided me about these posts. Our team and guidance of Rupali madam successfully organized a workshop. Best wishes to committee members and thanks to fellow mentor Rupali ma'am.

Thank you

The journey as PART OF this committee was incumbent, we had conducted many workshop quotidian and that was not solipsism it was all based on practical implementation and usefull in daily life, and largess of higher authority is unforgotteble , Thank to the authority who gave us this beautiful opportunity to being part of IETE.

Thank you

**PANKAJ GUPTA**
**CO-MEMBERSHIP HEAD**

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## EXTC Department Faculty

# EVENTs ORGANIZED

# Engineer's Day Celebration

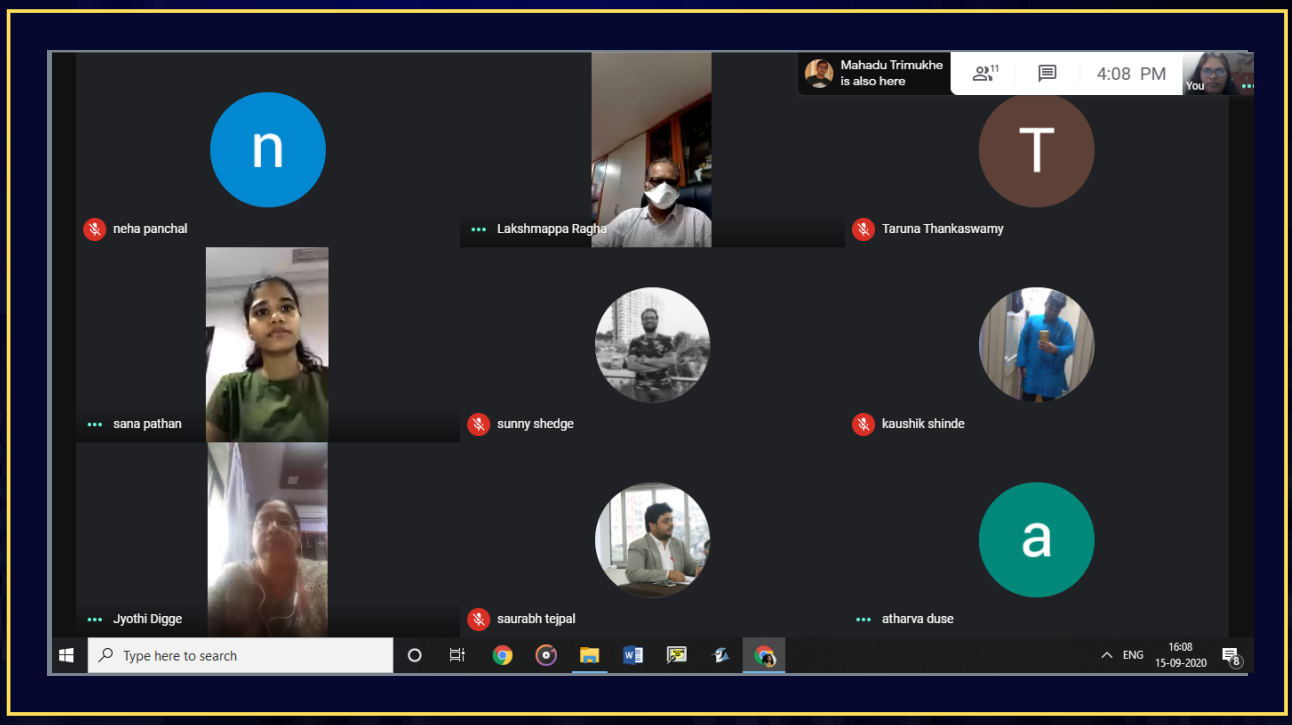
Engineer's day was celebrated on 15/09/2020 at 4pm Dr. Ragha, Principal TEC, addressed students. Dr. Jyothi Digge, HOD EXTC, graced the students with her valuable words.

The program was followed by Inauguration of technical magazine year 2019-20. The students were further enlightened with the purpose and importance of IETE.

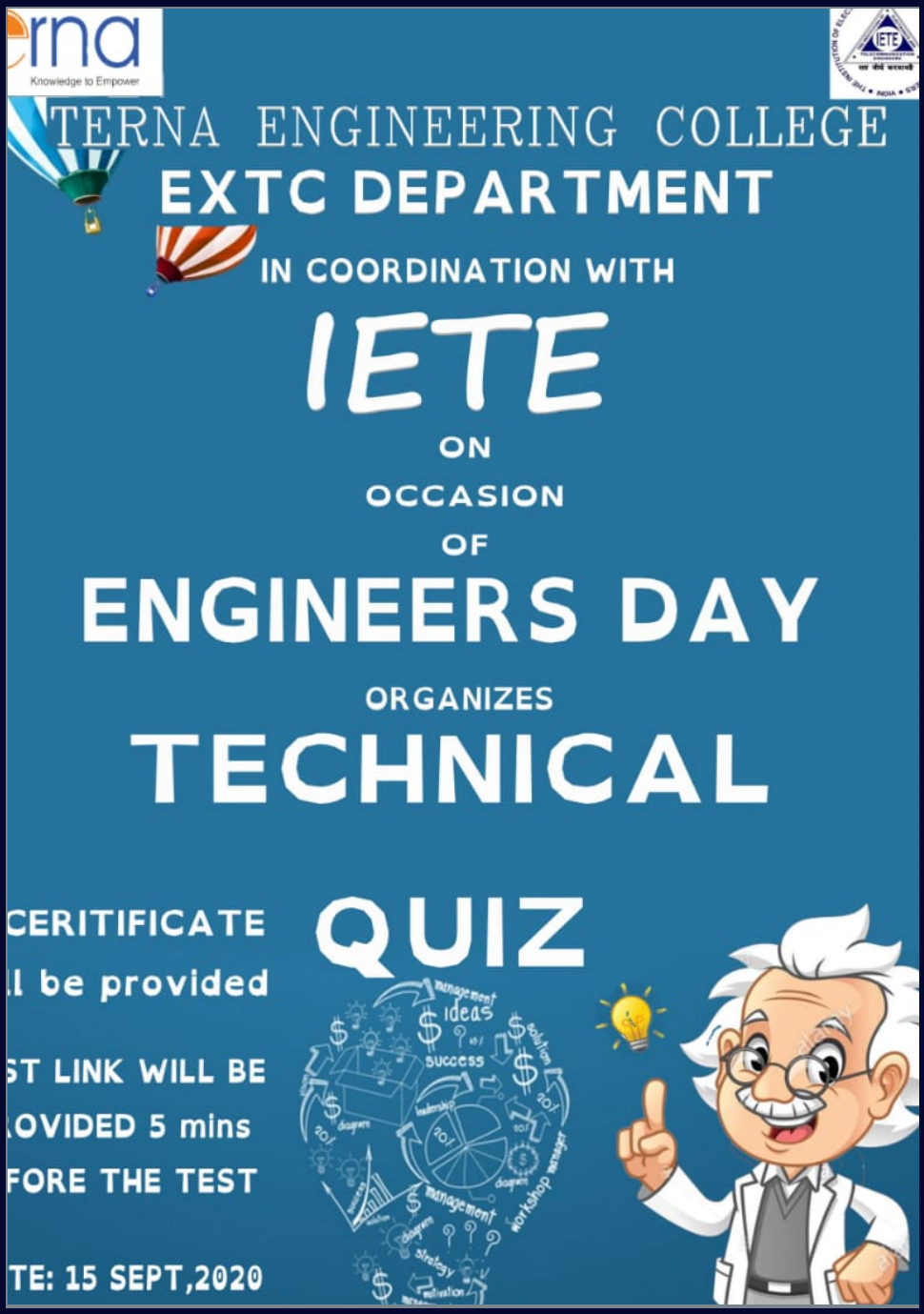
A quiz (MCQ) on current affairs and technical knowledge was conducted for everybody on online platform. The event was attended by over 71 students. Towards the end of the event, Dr. Jyothi Digge and Prof. Rupali Shekokar shared their experiences with IETE and urged more students to take part in the events.

The event was concluded with a vote of thanks by Ms. Taruna Nadar, Secretary, IETE.

Principal Sir, HOD Madam and IETE committee members attended Meeting and 71 participant attended Technical Quiz, in quiz 20 general technical questions have given.



# Leaflet of Engineer's Day Celebration and Technical Quiz



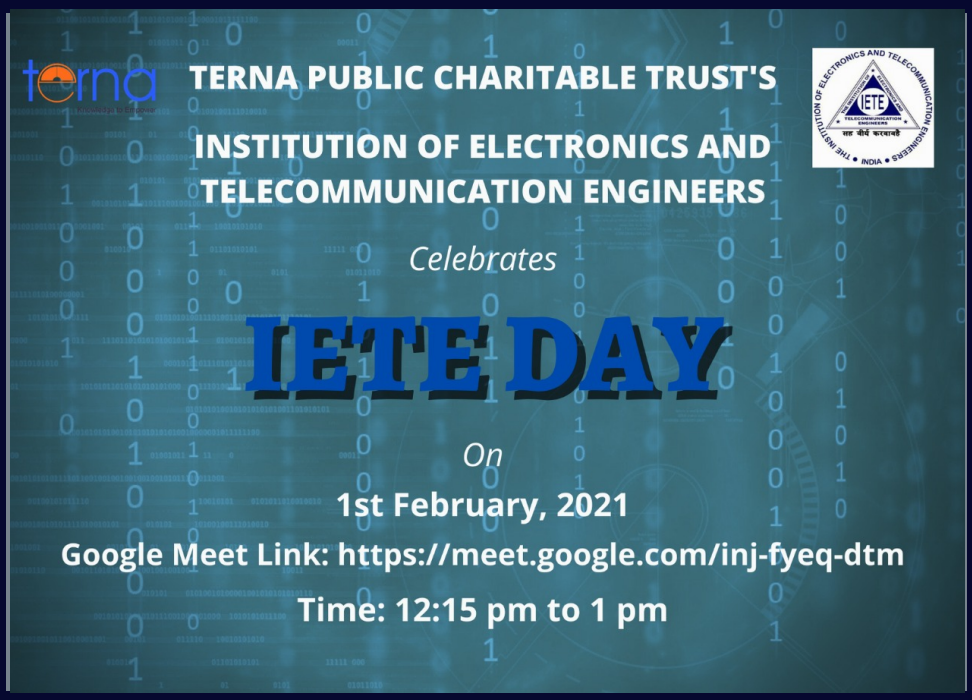
# IETE Day Celebration

To give information about IETE and benefits to become a member. IETE day was celebrated on 1/02/21 at 12:15pm, Dr. Jyothi Digge, HOD EXTC, graced the students with her valuable words.

The program was followed by an introduction to the committee members by Ms. Neha Panchal, president of IETE committee 2019-2020. The students were further enlightened with the purpose and importance of IETE. Students were encouraged to join the committee and contribute to the ever growing community of EXTC engineers.

A quiz (MCQ) on current affairs and technical knowledge was conducted for everybody on online platform. The event was attended by over 70 students. Towards the end of the event, Dr. Jyothi Digge and Prof. Rupali Shelokar shared their experiences with IETE and urged more students to take part in the events.

The event was concluded with a vote of thanks by Ms. Taruna Nadar, Secretary, IETE. Around 30 student attended Meeting and 51 participant attended Technical quiz ,in quiz 20 general technical questions have given.



# Webinar on Detection of Cyber Threats using Machine Learning

Expert talk on Detection of Cyber Threats using Machine Learning was organized on 23rd March 2021 by IETE Committee for EXTC SE and TE students on an online platform from 11:15 am to 1pm. The talk commenced with the welcome speech by professor Mr. Saurabh Tejpal.

Dr. Jyothi Digge, HOD of EXTC welcomed the guest.

The session was then handover to the guest. Dr. Narendra Shekokar, Professor, D.J. Sanghvi College of Engineering,Vile Parle. He gave a brief introduction on Security. He explained about introduction to various cyber threads such as interception, interruption and modification and their mitigation techniques also discussed about various cyber-attacks using machine learning.

Around 100 students have attended webinar and 69 students have filled feedback form and records are recorded through google spreadsheets and google form links

The seminar was concluded with a vote of thanks by Mr. Saurabh Tejpal.

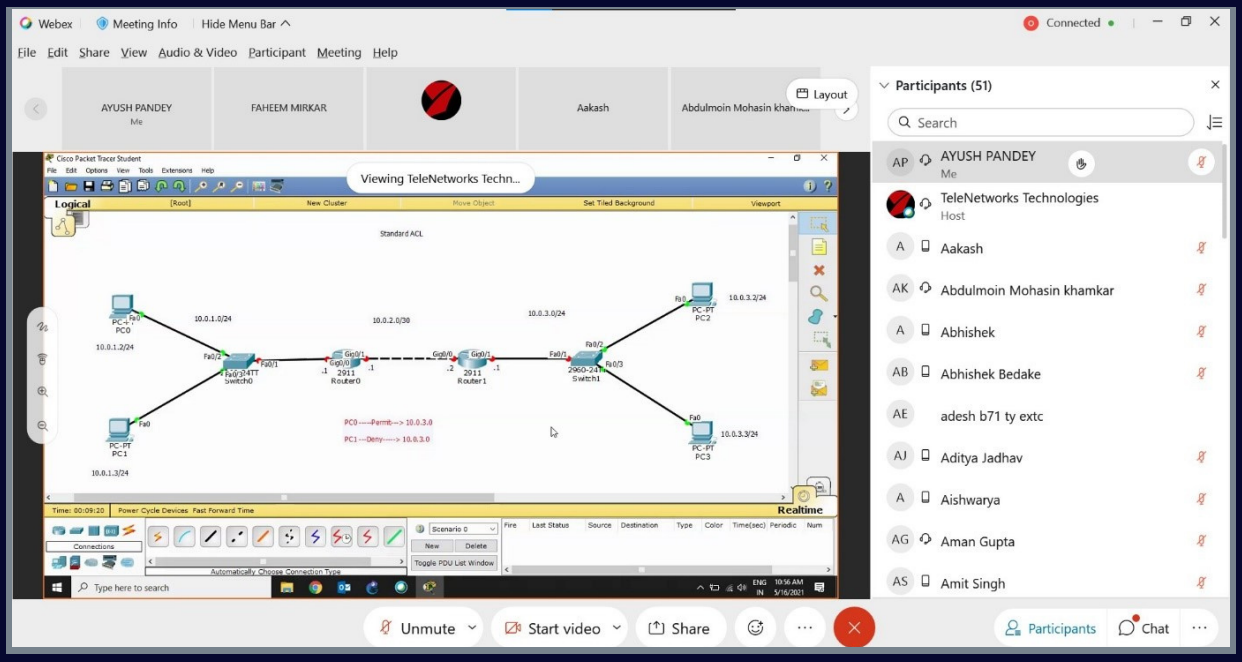
# Network Security Workshop

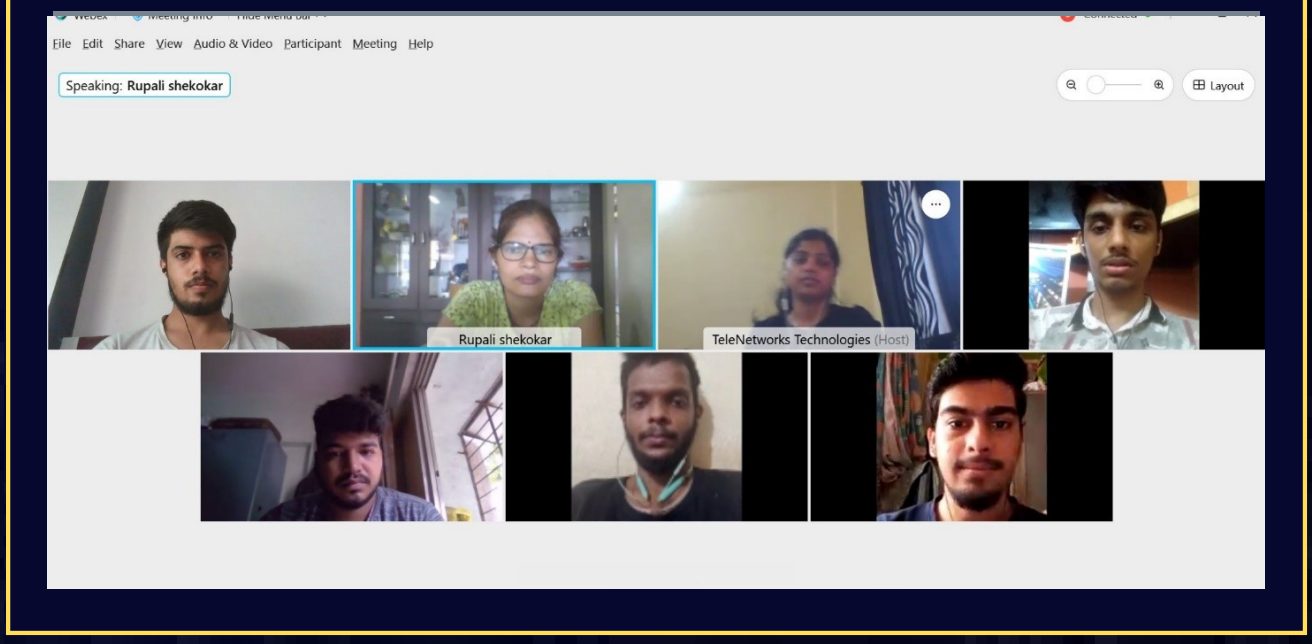
The objective of this event is for Introducing about Network Security among SE and TE EXTC & ELXT students. It was conducted on an online platform of CISCO WEBEX under the guidance of Dr. Jyothi Digge, HOD EXTC and Prof. Rupali Shekokar, IETE Coordinator, EXTC. The session was further taken by Ms. Prachi Mule, Solution Architect at Tele Networks Technologies Pvt. Ltd., Vashi, Navi Mumbai.

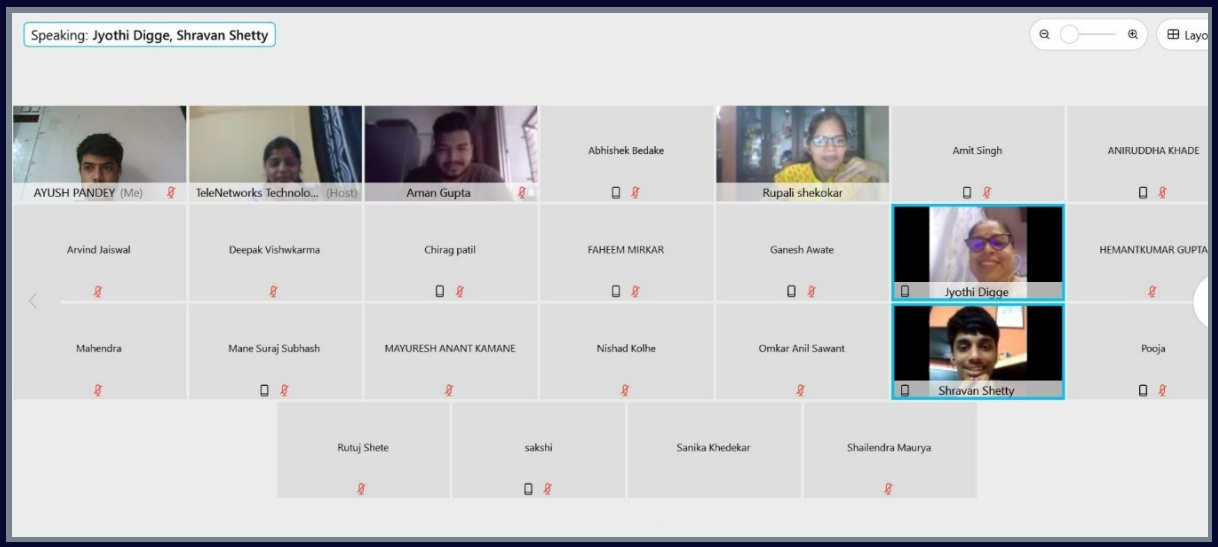
On 14th May 2021 at 3:00 pm a small introductory session on software installation was conducted as how to download software application and explored it and Prachi ma'am gave all basic instructions regarding software also solved downloading issues of students and concluded this session within 1 hour at 4:00 pm.
On 15th May 2021 at 9:00 am our 2nd session was conducted in which Dr. Jyothi Digge, HOD EXTC, graced the students with her valuable words and further Prof. Rupali Shekokar, IETE Coordinator, EXTC and Shravan Shetty IETE Secretary, EXTC welcome and introduce Prachi ma'am with their kind words. The session was divided into two parts the first half is from 9:00 am to 11:00 am in that Prachi ma'am took basics of Network Security such as (what is IP, different layers of networking, how to identify IP addresses and many more). A 30 minutes break given to students for refreshment after that the 2nd half begins from 11:30 am and last up to 1:30 pm in which ma'am took practical sessions using the CISCO PACKET TRACER APPLICATION.

The last day of the workshop on 16th May 2021 at 9:00 am our session was beginning with a count of 50 students. This session was also divided into 2 halves as similar to the previous session but the 1st half of the session was theoretical as well as practical using cisco packet tracer app in that ma'am took Configurations of multiple pc over different network through router and also stated how to ping a pc, after a break of 30 minutes 2nd half begins in which ma'am gave some crucial tips regarding scope of network security and also guide the students about career in Network Security Domain.

The three-day workshop was successfully concluded with a vote of thanks by Shravan Shetty to Prachi ma'am for giving their valuable time for this workshop and the students acquired the knowledge about Network Security Domain.




Speaking: Jyothi Digge, Shravan Shetty
AYUSH PANDEY (Me)
TeleNetworks Technolo... (Host)
Aman Gupta
Abhishek Bedake
Rupali shekokar
Amit Singh
ANIRUDDHA KHADE
Arvind Jaiswal
Deepak Vishwkarma
Chirag patil
FAHEEM MIRKAR
Ganesh Awate
Jyothi Digge
HEMANTKUMAR GUPTA
Mahendra
Mane Suraj Subhash
MAYURESH ANANT KAMANE
Nishad Kolhe
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Shravan Shetty
Pooja
Rutuj Shete
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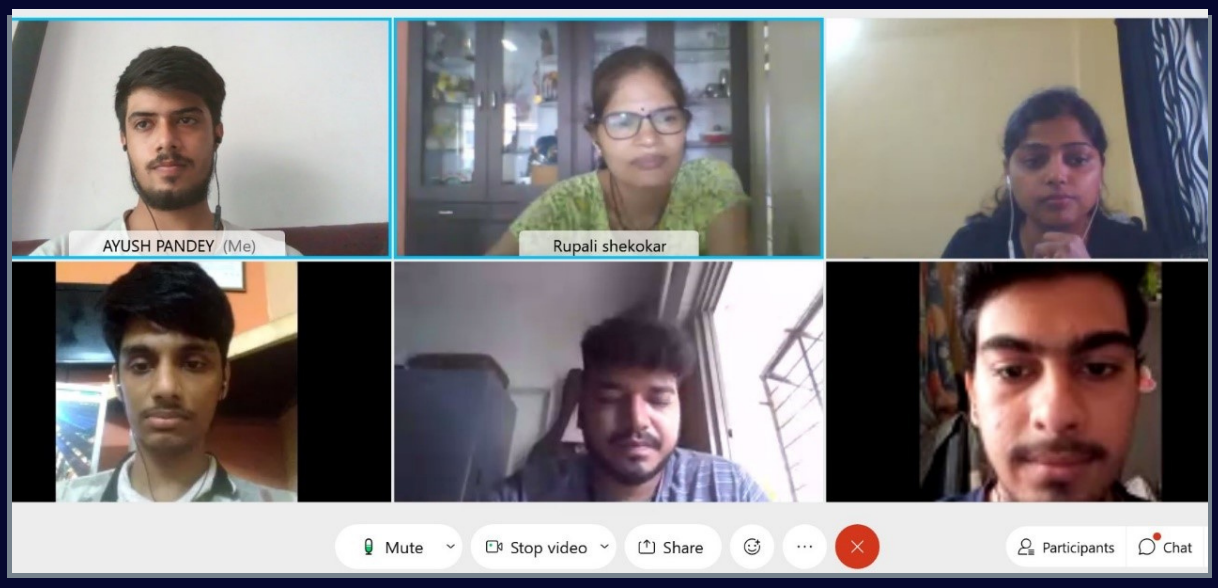
Sanika Khedekar
Shailendra Maurya


AYUSH PANDEY (Me)
Rupali shekokar
Mute
Stop video
Share
Participants
Chat

# STUDENTS PROJECT CORNER

# SOLDIER STRAP FOR COMBAT

Taruna

Sunny

Neha

With the development and advancement in technology soldiers have become primary and vital nodes of information collection and resource control on the battlefield.

Soldiers being the backbone of any armed force usually tend to lose their lives due to unavailability of medical help when in emergency, also soldiers who are involved in special operations get dawdled on war fields and lose contact with the control room.

Nowadays it has become a trend as well as a necessity to develop wearable devices with various functions for military purpose. However, densely deployed wearable devices provide a chance for briefly monitoring the health status of the soldier, location of the soldier and many such vital parameters, wearable technology based on multiple source fusion lacks a generalized research system to highlight the advantages of heterogeneous sensor networks and information combination.

Soldier strap aims to obtain enough evidence, decision making ability, and information resilience under resource constraints. This type of soldier strap demands for high security which can be established by using MANET-type communication. In the battlefield whenever the soldiers need any emergency support there must be a system which will establish the communication with the control room quickly and efficiently. For this very purpose the soldier strap has been facilitated with the SOS service to surpass such situations without any system errors. The strap will also enable us to keep a track on the position co-ordinates of the soldiers through GPS (Global Positioning System) and store the record of the same through the GPS timeline.

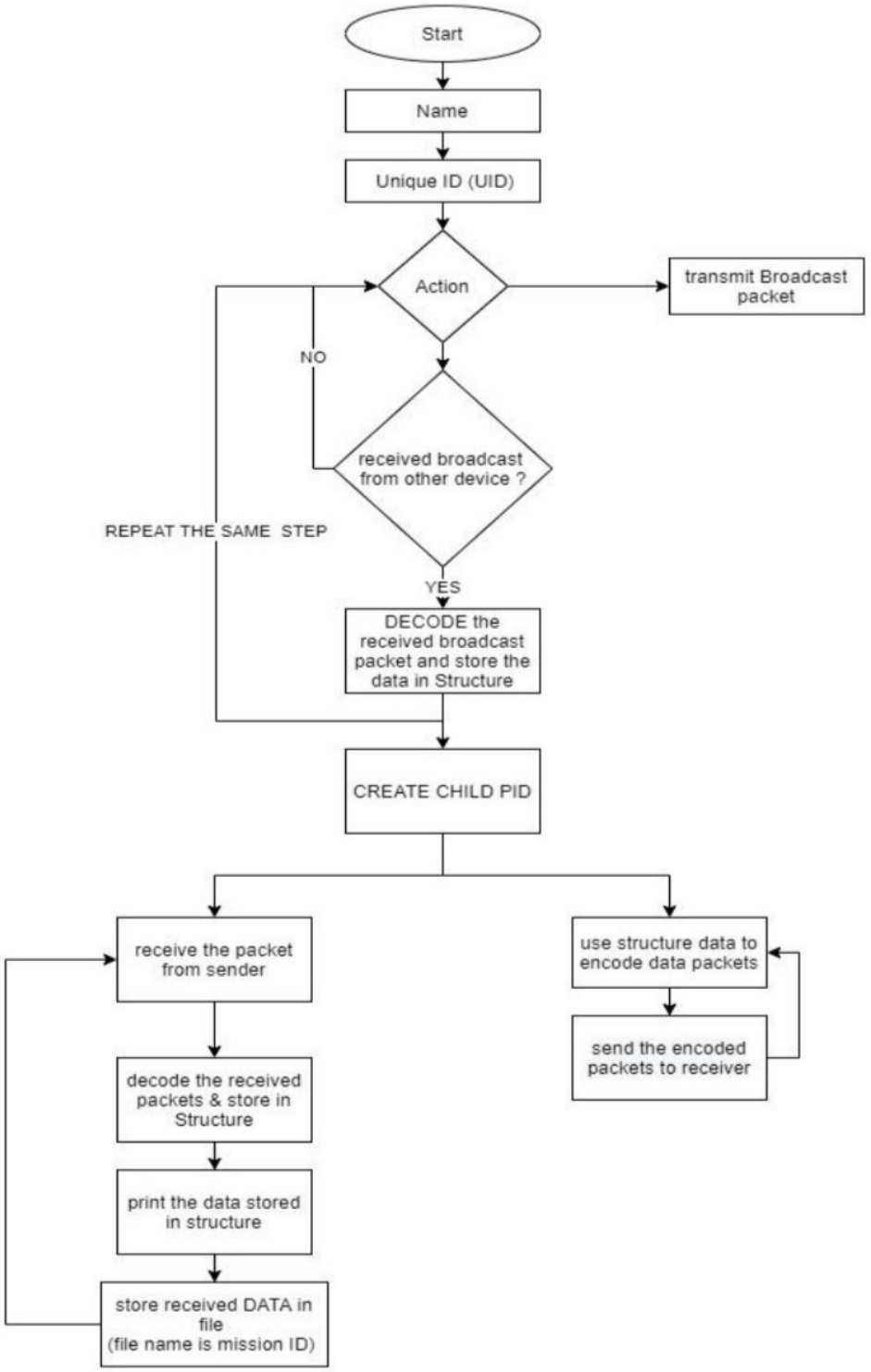
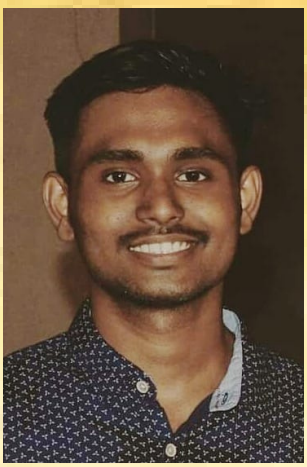



Figure 3.3 System workflow

# MATHEMATICAL EXPRESSION PLOTTER

Mandar

Sana


Aakash

Naimisha

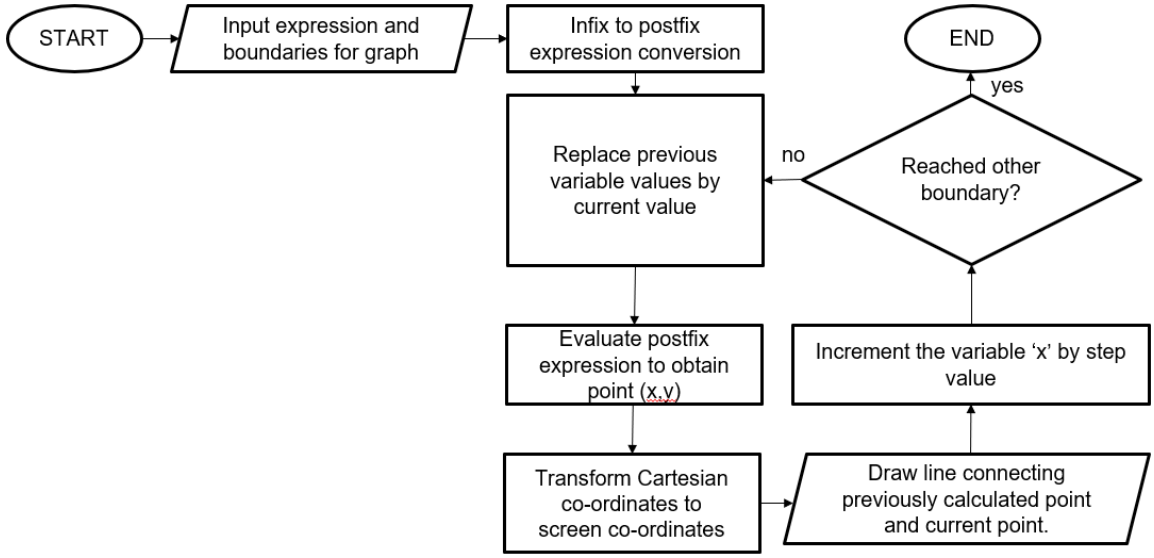
In the field of science and technology, many times engineers and innovators come across the mathematical expressions. Engineers, technicians are required to design a system according to its requirements. Basic idea of designing of any system is by relation the output and the input.

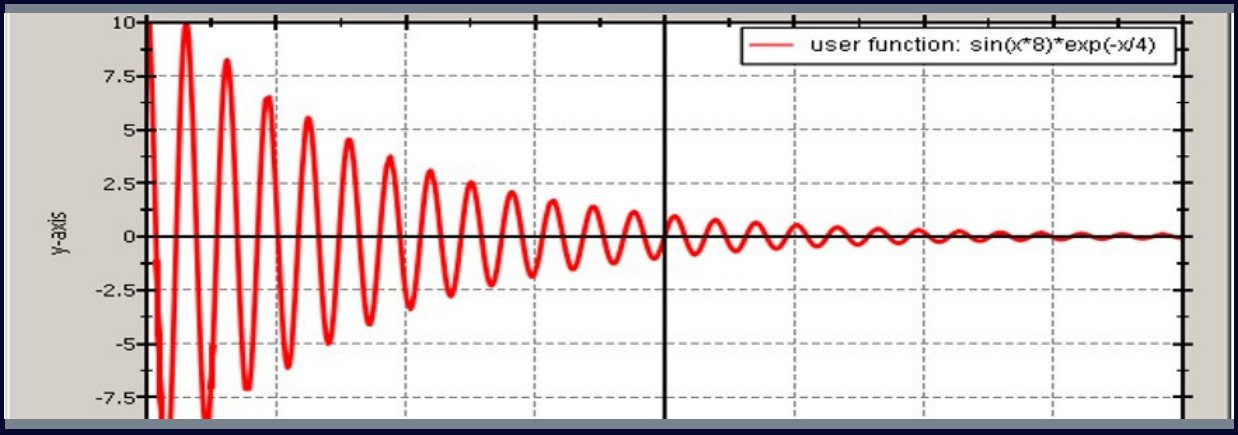
The output and the input are related with the help of the mathematical expressions. Such as the output is some function of the input. This is observed many times especially in the core fields of the engineering, such as Mechanical Engineering, where output physical quantity is related with the input physical quantity, such as force, pressure, etc. In Electrical Engineering and Electronics Engineering, the output physical quantities, such as voltage, current or power are the function of the input physical quantities, etc.

When the mathematical expressions are available, still it is necessary to analyze the expression. Such as in Electrical, Electronics engineering, the characteristic equation of the transfer function gives important information such as stability of the system. The stability of the system is determined by the location of the poles of the system, when the poles are at left hand side of the s-plane, the system is said to be stable, on imaginary axis indicates the system is marginally stable and at the right-hand side of the s-plane indicates the system is unstable. Also, it's necessary to observe the maxima and minima of the expression for the safety.

When the mathematical expressions are visualized, the tasks get easier. This is necessity of visualization of the mathematical expressions. The mathematical expression plotter is convenient tool for the analysis of the mathematical functions. The software is supposed to take the input expression from the user in the form of text, symbols, numbers, and it will plot the graph of the expression entered. The visualization of the expression is better way for the analysis of the function.

## Block diagram



# ANDROID FITNESS APP

Ankia

Shweta

Subhdeep

Sachi

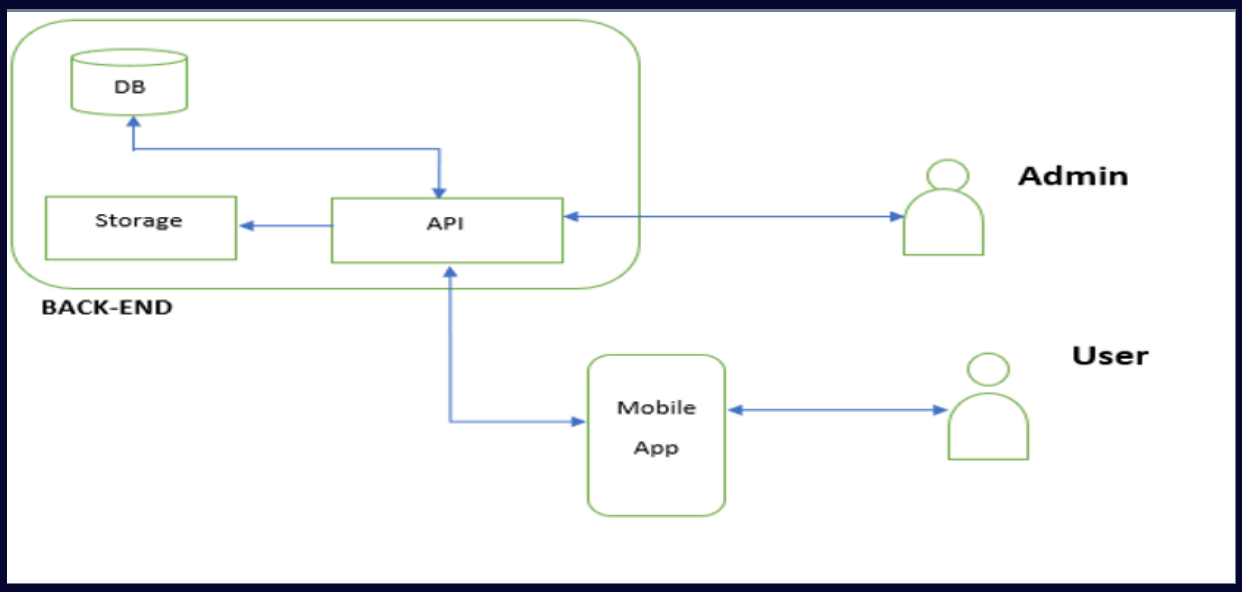
Fitness is divided into two sector physical and mental fitness;
Physical fitness gets plenty of attention and for good reasons, a healthy body can prevent various serious diseases such as heart, diabetes and also reduces ageing speed.

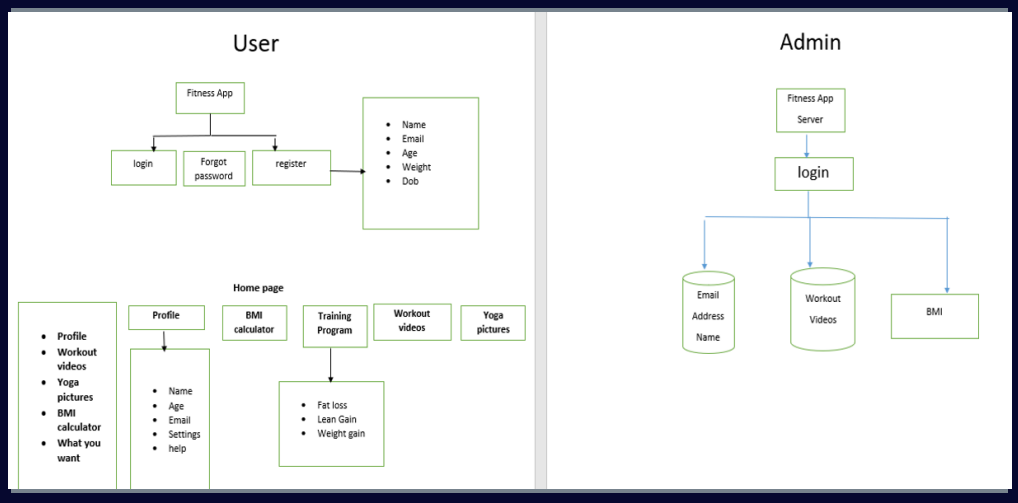
Mental fitness is just as important as physical fitness and shouldn't be avoided or neglected. Mental fitness keeps our brain and emotions healthy in tip top shape.

As thinking about the worse situation of people suffering from various kind of diseases just because of not living a healthy life style, so we have decided to build a mobile application which is aimed to develop a workout plan for people who needs to perform exercises daily and comfortably.

This app is designed to contain a built-in category of workouts. The collection of workouts is meant to contain descriptions and procedures on how the workout should be done. The collections of workouts are the one recommended by experts and each category has a set of different workouts, it even helps to maintain the consistency of the trainee to work out regularly, with regular notification facilities

# App Architecture & Flow Charts -



# FACULTY ACHIEVE-MENTS

# Prof. Anjali Rochkari

India, despite being a home of many globally popular games like Chess, Ludo, Snakes and Ladders, is not among leading developers and manufacturers of toys.

Under the 'AatmaNirbhar Bharat Abhiyan' initiated by our Hon'ble Prime Minister, Shri. Narendra Modi, Toycathon-2021 is conceived to challenge India's innovative minds to conceptualize novel Toy and Games based on Bharatiya civilization, history, culture, mythology andethos.

Toycathon 2021 is an inter-ministerial initiative organized by Ministry of Education's Innovation Cell with support from All India Council for Technical Education, Ministry of Women and Child Development, Ministry of Commerce and Industry, Ministry of MSME, Ministry of Textiles and Ministry of Information and Broadcasting. Currently, India's toy market stands at around 1.5 Billion USD, which primarily is dominated by imported toys. Moreover, majority of these toys do not represent Indian heritage, civilization and value systems.

Toycathon 2021 is a unique opportunity for Students, Teachers, Start-ups and Toy experts/professionals in India to submit their innovative toys/games concepts and win large number of prizes worth Rs. 50 lakhs.

I have been selected as EVALUATOR for TOYCATHON-2021 to evaluate the different types of TOYs & GAMES. The Grand Finale of TOYCATHON – 2021 is scheduled on 22nd,23rd & 24th June 2021. AICTE selected a team of 5 evaluators to evaluate participant's Toys/Games, We had done evaluation on 22nd & 23rd June 21.On 24th June 21, our Hon'ble Prime Minister, Shri. Narendra Modi interacted is with some participants.

# Dr. Mahadu Trimukhe

He earned his Doctorate (PhD) in Electronics and Telecommunication Engineering from the University of Mumbai in 2021. His major research interest is designing of Ultra-Wideband (UWB) Antenna, Band Notch UWB Antenna, and UWB Band Notch Tunable Antenna. His one design patent, granted by the government of India. His research work was selected in the final round Avishkar state level competition and received one minor research grant from the University of Mumbai.

# PATENTED RESEARCH PAPER

## TOPIC : NHAM- Combined Health Monitoring: IoT- Based Combined Health Monitoring, Notification, Home Invention: Automation and Medicine Prediction System

Mr. Tejpal Saurabh Avinash

Patented By : **Saurabh Tejpal**

**Abstract :**

"NHAM- Combined Health Monitoring" is a data collection system a high resolution and a high data rate and sends a low-resolution and down defined version of the data to a remote server via a wireless network. The Indented technology also includes the advanced server automatically analyses the less detailed data to detect an anomaly and a Two-tiered analysis is used where the first tier is less specific than the second tier than the third tier. The Indented technology also includes the received data and make it available to a user and the invented technology also includes the is an advanced patient monitoring concept and a sensor is coupled to a patient and configured to detect biometric data associated with the patient and a mobile computing device includes a memory that stores computer executable instructions and a processor executes the computer-executable instructions. The Indented technology also includes a monitoring system for a person includes a processor coupled to one or more wireless nodes a #4-G mobile appliance in communication with the client and more than two wireless nodes and one or more computer implemented agents with rules executed by the processor the rules being selected to respond to a client communication relating.

The invented technology also includes the to a predetermined health condition each agent communicating with another computer implemented agent the client or the treatment professional, and upon receiving a communication from the client, the processor selecting one or more computer implemented agents to reply with an instruction on healthy client behaviour.

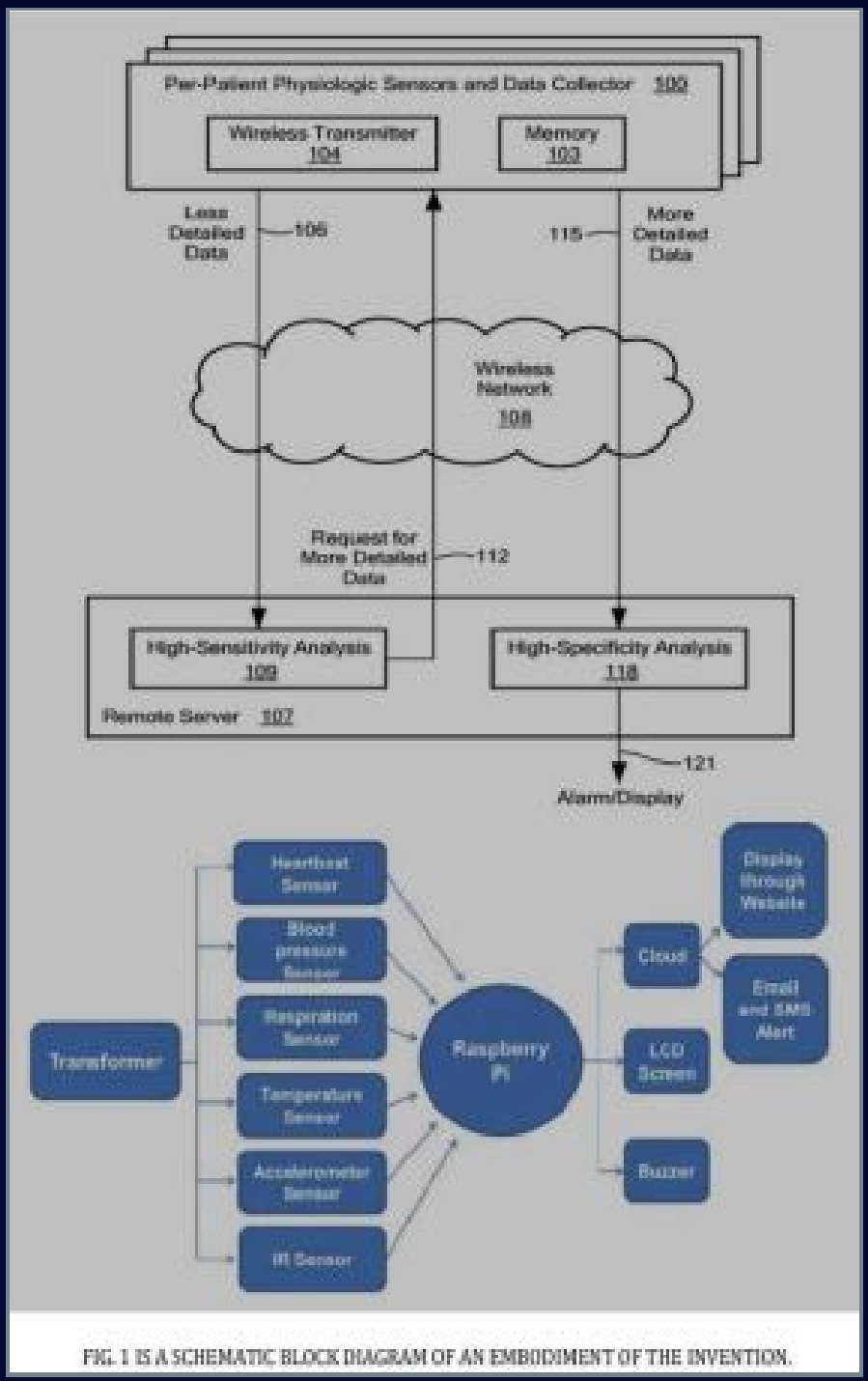
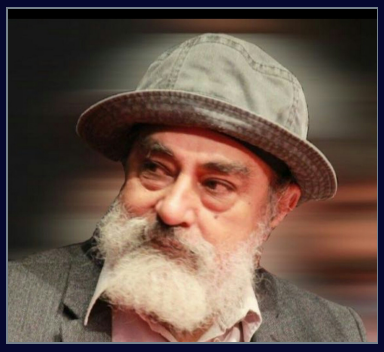



FIG. 1 IS A SCHEMATIC BLOCK DIAGRAM OF AN EMBODIMENT OF THE INVENTION.

# EXTC DEPARTMENT FACULTY

Dr. Digge Jyoti Jayaraj
HOD, EXTC
Professor

Dr. Gupta Rajiv Kumar
Professor



Dr. Manmohan Singh
Bhatia
Professor

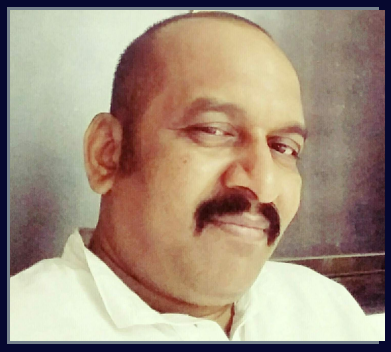
Dr. Kharche Shilpa
Uday
Associate Professor

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
Assistant Professor

Mr. Kadam Atul Shivajrao
Assistant Professor

Mr. Koli Virendra Ramesh
Assistant Professor

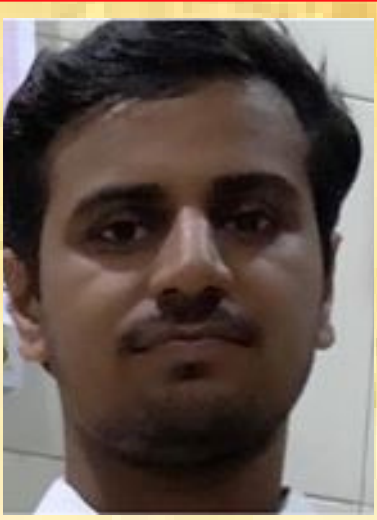
Mrs. Rochkari Anjali Durgada
Assistant Professor

Mr. Tejpal Saurabh Avinash
Assistant Professor

Mr. Yadav Vijaypal Rajansingh
Assistant Professor

# IETE COMMITTEE MEMBERS 2019-2020

*SHIVOM*



*ATHARVA*

*NINAD*

*NEHA*

*KAUSHIK*

*TARUNA*

*SANA*

# *THANK YOU*

Thanks to all the previous committee members for your hardwork and dedication towards the wonder Committee and conducted amazing events, the way you all executed the events gave us an example to conduct the further events. The way you all took the committee to a long way in the same way we will take it forward. We will try to give 100% effort in future.

Thank you all