



Mahavir Education Trust's  
**SHAH & ANCHOR KUTCHHI ENGINEERING COLLEGE**

*Department of  
Electronics and Telecommunication Engineering*



# Communique

(ISSUE 1, OCTOBER 2018)

## **Vision of Institute**

To become a globally recognized institution offering quality education and enhancing professional standards.

## **Mission of Institute**

To impart high-quality technical education to the students by providing an excellent academic environment, well-equipped laboratories and training through the motivated teachers.

## **Vision of Department**

To be recognized as the excellence centre in creating competent Electronics & Telecommunication professionals by imparting quality education.

## **Mission of Department**

1. To provide quality education through a blend of curricular, co-curricular and extracurricular activities.
2. To offer Industry-Institute interaction and skill enhancing projects for better higher education and career opportunities.
3. To enhance the capabilities of students through motivated, dedicated staff and laboratories equipped with the latest technology.



# Communique

## From the Principal's desk

*The magazine of Electronics and Telecommunication Engineering Department represents the vista of creativity and budding talent of the students. It is heartening to know that via magazine, not only are the technical skills and competency of the students brought to the fore but also their energies are channelized towards the right direction. It enables student multifaced personality as one steps out of the Institution by making them aware of the intricate web of human social values, traditions and customs.*



*I heartily congratulate the team for their hardwork and coming out with such a fine magazine in a short time.*

**Dr. Bhavesh Patel**  
Principal,  
SAKEC



# Communique

## From the Vice-Principal's desk

*It has been a challenging, exciting and path breaking last few months for all of us. We must keep learning and keep our best foot forward to keep a pace with growth and changes in industries. This edition is published so that we can renew and mould our energies to a new and better tomorrow.*

*I heartily congratulate all who have immensely contributed to this journey and wish you the best ahead.*



**Dr. V. C. Kotak**  
Vice-Principal  
SAKEC

# EXTC

## Communique

### From the HOD's desk

*It gives me immense pleasure to present the The Communique, that marks the transition of the department from its gestation period to self-reliance! Truly, irrespective of class, cadre or caliber, it is the dynamism and pervasiveness of the vision of the department, in-sync with the institution that has finally lead us till here. Numerous departmental activities that strengthened the staff and students, their achievements and talents are worth sharing with. I congratulate the editorial team for their correlated efforts in bringing out this Newsletter. We hope this endeavour in our teaching learning process to bloom into a robust platform of expression in its coming editions.*



**T. P. Vinutha**

*I/C Head of Department*

*Department of Electronics & Communication Engineering*

**SAKEC**

# Department of EXTC



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# Faculty Profile



**T.P. Vinutha**

*Designation : In-charge Head of Department*

*Work Experience : 15 years*

*Qualification : Pursuing Ph.D.*



**Mamta Tikaria**

*Designation : Asst. Professor*

*Work Experience: 12 years*

*Qualification: M.E. (E & TC)*



**Rohan Borgalli**

*Designation : Asst. Professor*

*Work Experience: 5 years*

*Qualification: M.Tech.*

*(Digital Systems)*



**Gauri Chavan**

*Designation : Asst. Professor*

*Work Experience: 12 years*

*Qualification: M.E.(Electronics)*



**Shridhar Sahu**

*Designation : Asst. Professor*

*Work Experience: 6 years*

*Qualification: M.Tech.*

*(VLSI)*



**Jagdish Sarode**

*Designation : Asst. Professor*

*Work Experience: 3 years*

*Qualification: M.Tech*

*(Digital Systems)*



**Uma Raj**

*Designation : Asst. Professor*

*Work Experience: 5 years*

*Qualification: M.Tech*

*(Communication Systems)*



**Ashish B Tank**

*Designation : Asst. Professor  
Work Experience: 4 years  
Qualification: M.S.  
(Wireless Communication)*



**Sujitha Kurup**

*Designation : Asst. Professor  
Work Experience: 3 years  
Qualification: Pursuing Ph.D.*



**Padmavathi Perumal**

*Designation :Asst. Professor  
Work Experience: 5 years  
Qualification: M.E.  
(Communication Systems)*



**Seema Kawale**

*Designation : Asst. Professor  
Work Experience: 5 years  
Qualification: M.E. ( EXTC )*



**Gauri Deshpande**

*Designation : Asst. Professor  
Work Experience: 2 years  
Qualification: ME (EXTC)*



**Bhushan Pawar**

*Designation : Asst. Professor  
Work Experience: 5 years  
Qualification: M.Tech  
(Communication Engineering)*

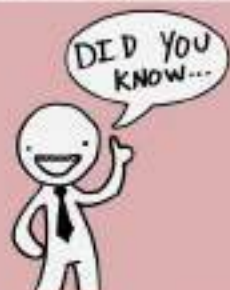
## **Non Teaching Staff**



**Ms. Minakshi Sanas**



**Mr. Rohan Parab**



The world's first mobile phone call was made in 1973 by Motorola employee Martin Cooper from the streets of New York City. He called his biggest rival.

The memorable Nokia tone for receiving SMS text messages is Morse code for 'SMS' Likewise, the 'Ascending' tone is Morse code for 'Connecting People,' (Nokia's slogan) and 'Standard' is Morse code for 'M' (Message).



Nematic !

Nematic is a YouTube channel created by Nemeen (who is currently in Second Year EXTC Engineering) in June 2016. He is Electronics Enthusiast and as there is a huge decline in electronics hobbyist in past few years he started this channel to inspire people to create. Since then he has gained 16,000 subscribers and a whopping 1.67 million views.

Subscribe to his channel:



# Alumni Speaks

## Udaykarthik Murugand

Uday is an EXTC passout from the very first batch of 2015-16. He was also the 1st rank holder in EXTC from S.A.K.E.C.

He is currently pursuing his Master's in Computer systems Networking and Telecommunications at the North-Eastern University, Boston, U.S.A



Firstly, I would like to thank everyone for giving me this opportunity to connect to my fellow EXTC mates. SAKEC has really been the core foundation of my career where I had the opportunity to learn a handful in really a short span of time.

My journey began similar to most of you guys. My interest in Electronics goes well in my childhood which encouraged me to take up Electronics as a vocational course after S.S.C. It was my first experience in understanding basic Analog and Digital Electronics which became handy whilst in SAKEC. I must say that being developed an interest earlier has helped me choose my field of interest vividly.

There is always something to learn from our Professors and believe me, they can be the most helpful resource that we can have. Right from ignoring the late submissions to helping out during viva with an External Professor, they have supported me throughout. I would like to thank them all personally to have such a deep impact in my career and helping me withstand all my obstacles.

After SAKEC, I chose to pursue my Masters in Computer Systems Networking and Telecommunications at Northeastern University. Right from Day One, I felt all my learnings at SAKEC have been re-enacted again. Data Networks, Computers Networking are few of courses that I felt I was lucky to have a decent exposure during my SAKEC days. Currently, I am interning as a Software Quality Assurance Engineer at Affirmed Networks and I feel that all my fundamentals are somehow helping me perform better.

On a concluding note, I would like to say that there are few things in life that never change and one of it is the quality of education. Get the most out of every day and try to get the best one from inside. Have your basics strong always.



### AN INSIGHT TO MODERN ROBOTICS

Department of Electronics & Telecommunication Engineering in collaboration with IETE- SAKEC student's chapter, conducted a Faculty Development Program on: "An Insight into Modern Robotics" on 15<sup>th</sup> July 2017. The speaker of the session was Dr. J. K Mukherjee, Director BrahMos Aerospace and former Outstanding Scientist, DAE. The event was addressed by the welcoming words by Principal, Dr. Bhavesh Patel sir and attended by faculties of Electronics Engineering Department and Electronics & Telecommunication Engineering Department.

Dr. Mukherjee talked of a different approach (screw theory) to describe motion of rigid bodies in space and design the appropriated control laws. This method, also known as screw theory, has multiple advantages in respect to the "conventional" methods. The event was coordinated by Mrs. Mamta Tikaria and the program ended with thank you note from Head of EXTC Department Mrs. T. P. Vinutha.



### ORIENTATION TO SECOND YEAR STUDENTS

The IETE student chapter organized an Orientation program for Second year EXTC students on August 10, 2017 to broadcast its objectives, events, scope and activities. The Co-coordinators, Anuj Jain, Snehal Shimpi and Manu Nair talked about how the IETE provides a common platform for the student members to exchange ideas and information on the topics of their interest e.g. curriculum, employment / higher educational opportunities, emerging trends, new development etc; and also, how the IETE encourages team work and the spirit of self-reliance among the student members.





## FDP ON ADVANCED DIGITAL COMMUNICATION

Department of Electronics Engineering in association with IETE of SAKEC conducted a Faculty Development Program on 'Advanced Digital Communications and Cryptography' on August 22, 2017. This event has been conducted by Dr. Archana Bhise who explained the security features provided by Whatsapp. This messenger is arguably the most popular mobile app available on all smart-phones. In April 2016, WhatsApp switched to a default end-to-end encrypted service meaning all messages (SMS), phone calls, videos, audios, and any other form of information exchanged cannot be read by any unauthorized entity. In this faculty development program she elaborated the security architecture of WhatsApp and how encrypting the end-to-end channel preserves privacy of information.



## IEEE FDP ON XR-TRANSFORMING PHYSICAL AND DIGITAL WORLD

Department Electronics and Telecommunication Engineering in association with IEEE Bombay Section TEMS and IEEE SAKEC have organized a Faculty development Program on "xR- Transforming Physical & Digital World!" on 16<sup>th</sup> September 2017. This event was conducted by Mr. Chintan Oza who explained about xR which include virtual reality and augmented reality. He also explained about how moving from 2D to 3D initiated fundamental shift in how people expected to interact with real and digital objects across all digital devices which had significant enterprise implications.



# EVENTS



An event every SAKECite looks forward to is our annual technical and cultural festival. A high point in the history of the college annual festival was that this year it was named “Prathistha”, a term coined by the Student Council team who worked really hard to put up an enthralling experience for one and all. Like every other year, Prathistha 2018, was kick started by Yuva, a tradition where each and every individual from our college will leave their handprint on the flex which is made by our students as a mark of unity. It was a festival of joy, color and happiness for all as Yuva was inaugurated by our respected Chairman, Shri Kesavjibhai Chhadva and Managing Trustees Shri Navin K Shah, Shri Mansukh L Shah and Shri Jayanti Kesavji Chhadva, the Principal, Dr Bhavesh Patel and the Vice-Principal, Dr V.C Kotak. We also had Teena Ahuja, daughter of veteran Actor Govinda along with the cast of the marathi movie, “Memorycard” to witness the super electrifying young energy of SAKEC in action.

The two-week long festivities had something for everyone. OLYMPUS signifying healthy competition served as a significant platform for sports activities for both faculty and students. Several sports such as Tug of War, throw ball, Cricket, Badminton, chess and Table Tennis was played by one and all. It proved to be quite a sensation among the students and the faculty to showcase their sports potential. It was real fun to see our professors running between the wickets!

The technical wizards of SAKEC were put to test at our very own NUCLEUS where all the elite engineers came together and demonstrated their power in technology. This segment revolves around the characterized world of Robotics with crazy circuit connections.

# EVENTS



The eye-catching event of Nucleus remains to be R1 - an extreme National Level competition and one of the most exciting races in Mumbai. The other events included Gaming section such as LAN Gaming, Mobile Gaming, VR Gaming along with Robo-Soccer and RoboWars.

Fitness is about becoming the best version of you, no matter what level you may be at. The SAKEC MARATHON, inspired from the movie PADMAN urged to promote and spread awareness of women hygiene. It saw active participation from the Principal, Dr. bhavesh Patel, Vice Principal Dr. V.C. Kotak, Dean of Student Affairs, Prof. S. Hegde along with other faculty and students in huge numbers.

This year PRATISHTHA introduced 8th edition of IEEE SAKEC MUN- Model United Nations, an extra-curricular activity where in students typically role-play delegates to the United Nations and simulate UN committees. It involved debating on specific agenda's where public speaking, teamwork, diplomacy, leadership abilities were put to test and gave a great exposure to the world political happenings to the participants. With SAKEC Studio and the three-act play, Prathistha's VERVE gave a soul stirring experience to some while others swayed to the foot tapping dance numbers in the inter college dance competition. The glitzy Fashion show was just the icing on the cake!



# EVENTS



## THREE DAYS HANDS ON WORKSHOP ON IOT

Department Electronics and Telecommunication Engineering in association with IETE SAKEC have organized IETE approved three days hands on workshop on "Internet of Things (IOT)" from 9<sup>th</sup> January 2018 to 11<sup>th</sup> January 2018. The event started with keynote address of Dr. Sapna Prabhu who provided an overall idea about the "Internet of Things(IOT)" followed by session conducted by Mr. Ganesh Gore who took the hands-on session on FRDMKL25Z using Mbed platform. The workshop also had session by Prof. Yogesh Pingle who demonstrated the installation of Raspbian OS and the research areas of IOT which was followed by a session of Ms. Jangavi Kulkarni where FRDMKL25Z with IOT application was realized and taught how to send data on cloud using Wi-fi shield ESP8266 with FRDMKL25Z board along with its applications using ESP8266 with Arduino Uno board.



## INDUSTRIAL VISIT TO RMC, COLOBA

The Industrial visit was organized by Prof Mamta Tikaria and Prof Gauri Deshpande and a total of 20 students from college attended the same. On 14<sup>th</sup> March 2018, with issued gate passes the students were introduced to their guide for the day, Mr. Yashwant Satam. The students were introduced to the Doppler Weather Radar station where they learned about Effective range and Radar parameters along with its applications to view weather conditions. The students were also shown around the Surface Observatory System where the Evaporation well, Air comparison system and the Rain gauge system made the students realize the importance of radar in meteorological department.



# EVENTS



## POSTER COMPETITION



A Poster presentation competition was organized by the Department of Electronics and Telecommunication in association with IETE SAKEC on March 21, 2018 for the final year students of the department. About 60 students comprising of 17 teams participated in the competition and the event was judged by Prof T.P. Vinutha and Prof P.G Khedkar. The event was also graced by the presence of the Principal, Dr. Bhavesh Patel, Vice Principal, Dr V.C. Kotak and Dr. Uma Rao, Head of the department of Electronics engineering. The efforts put in by the students were lauded by the judges and the top three posters were declared at the end of the event.

1. Face Recognition System
2. Smart Trash System
3. Intelligent Food Serving System



# FACE RECOGNITION SYSTEM



Preeti Nadar, Malika Hafiza Pasha, Umara Pasha, Rakshith Poojary

Department of Electronics & Telecommunications Engineering

Mahavir Education Trust's Shah & Anchor Kutchhi Engineering College – Affiliated to University of Mumbai, Approved by D.T.E & A.I.C.T.E.

## Abstract

### Face Recognition System

- Biometric method of identifying an individual
- Compares live capture of digital image data with the record stored in database
- Unauthorized entry requires authentication

### Aim of the Project

- ☑ To detect and identify a human face
- ☑ Software implementation of supervised classification using Eigen Faces
- ☑ Remote monitoring and controlling using IoT

### Eigen Face Method

- ◆ Training set is prepared first
- ◆ Person is recognized by comparing characteristics of the face to those of known individuals

## Introduction

### ROLES OF HUMAN FACE

- ☑ Conveying people's identity
- ☑ Social interaction
- ☑ Key to security

### BIOMETRIC FACE RECOGNITION TECHNOLOGY

- Non-contact process
- Face images can be captured from a distance
- Identification does not require interaction with the person
- Applications in both law enforcement and non-law enforcement

## Problem Statement

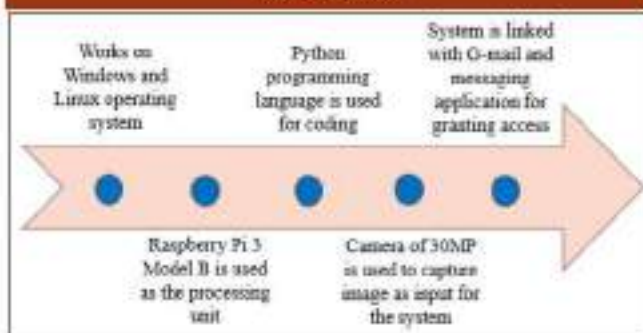
To provide a stable and cost effective system that can be used for facial recognition on a commercial basis at different levels of security.

## Proposed Solution

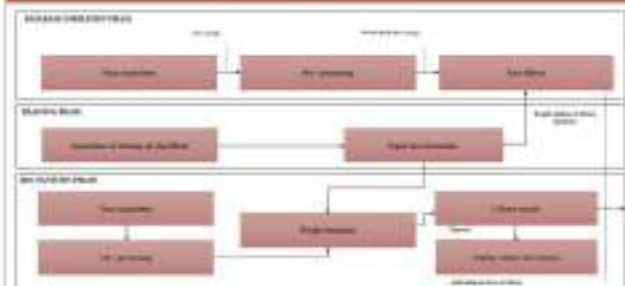
## HARDWARE

|                        |                |
|------------------------|----------------|
| RASPBERRY PI 3 Model B | Camera         |
| Power Supply           | Driver Circuit |
| SOFTWARE               | PYTHON         |

## Project Description



## Methods and Materials



- Capture the facial image using Camera
- Face is cropped out
- Image is de-noised and saved in the database
- Analyzing the image present in the database
- Imports various packages for image processing
- Creates set of Eigen Faces for captured image
- Loads the trained data
- Compares the captured image with the database
- Detects in detect and recognize the face

## Results

- ☑ Works on OpenCV which is user-friendly
- ☑ Processes maximum variations
- ☑ Operates in controlled environment
- ☑ Efficiency of the system is 90%

## Discussion

- Face Recognition System is remotely accessed using IoT
- Uses Android platform based Messaging Application
- Captured image of unauthorized person is sent to the authorized user's G-mail account
- Authorized user then decide whether to grant access or deny

## Challenges

|                      |   |
|----------------------|---|
| Variations in pose   | Head positions, Frontal view, Profile view and Head tilt, Facial expressions    |
| Illumination Changes | Light direction and intensity changes, Cluttered background, Low quality images |
| Camera Parameters    | Resolution, Color balance   |
| Occlusion            | Glasses, Facial hair and makeup   |

## Conclusions

- More than 200 entries is allowed in the database
- Entries in the database can be expanded by increasing the size of the MicroSD Card
- Requires only one scanning without any need for a complicated analysis

## Future Work

- ☑ Can be incorporated using encryption of the screen which ask for an otp / sms every time the user logs in
- ☑ Can be merged with other Biometric techniques to enhance security
- ☑ Processing Time can be reduced by using upcoming versions of Raspberry Pi

## Contact

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 Phone: 987124446, 9833015121, 982985502, 982933442

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# Smart Trash System

Sachin Hiran (18), Mandeep Singh Kakad (25), Shubham Kochale (28),  
 Yogesh Mane (31)

Shah & Anchor Kutchhi Engineering College,  
 Electronics & Telecommunication Engineering

## Abstract

- The Smart trash system identifies fullness of bin, further it collect data and sends it to the webpage via Wifi.
- Sense-making method.
- Real time information is send to the driver.
- Daily basis report can be generated.

## Introduction

- Lack of sanitation leads to unhygienic condition.
- To avoid this problem "Smart Trash System" is proposed.
- This project aims at design, fabricating and implementing an Smart Trash System.
- A webpage is designed to monitor multiple dustbins at multiple locations.

## Description

- Ultrasonic Sensor: It is used as level detector.
- Gas Sensor : Sensing of hazardous gases like Methane, Propane, Butane, etc.
- Wi-Fi: Used as communication medium between the bin and the server.
- Controller: Atmega328 is used to process,& manipulate the data of sensors, Wi-Fi, server.

## Function-Block Diagram

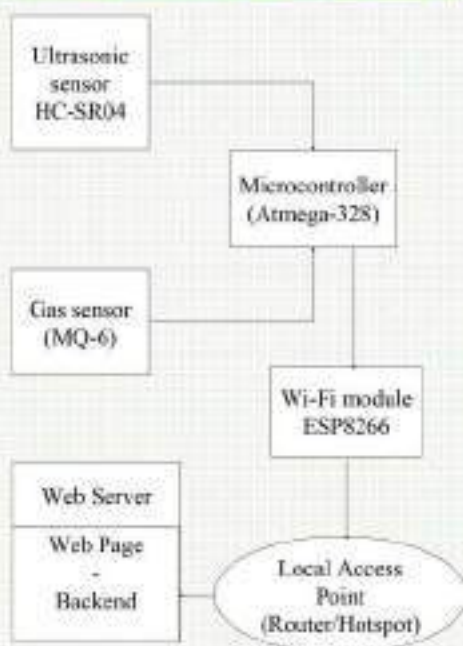


Fig.1 Block Diagram of Smart Trash System

## Results

- Status of 3 bins was observed for one month period.
- Recorded data for three bins located at 10m, 250m, 400m away from user's location.
- On the basis of daily analysis, controller transmits and displays the bin status on webpage.

| TIME     | AREA 1 (Decorative CHS.) | AREA 2 (Sabary CHS.) | AREA 3 (Collector colony) |
|----------|--------------------------|----------------------|---------------------------|
| 7:30 AM  | HIGH                     | OVERFLOW             | HIGH                      |
| 2:00 PM  | LESS                     | LESS                 | LESS                      |
| 10:00 PM | HIGH                     | MODERATE             | MODERATE                  |

Table 1. Daily based bin information.

## Web-page Design



Fig.2 Webpage Design

## Conclusions

- Automatically checks whether the bin is full or not.
- Generation of daily basis report can help us in reducing the waste.
- Better way of disposing industrial waste.

## Future Scope

- By using GPS, truck can be tracked.
- Segregation of waste can be done.
- Solar panel can be used for power supply.

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# ACCELEROMETER BASED HAND-GESTURE CONTROLLED PATIENT ASSISTANCE SYSTEM

Sanmesh Patwa; Rachna Sarvankar; Monika Trivedi; Aditya Upadhye

Guide: Prof. Shridhar Sahu

Department of Electronics and Telecommunication Engineering



## Abstract

- The world is growing faster and so are our medicinal facilities.
- Our project aims at taking smart patient assistance system to next level.
- The main purpose of using gestures is that it provides a more natural way of controlling and provides a rich and intuitive form of interaction with the robotic system.
- Hand Gesture Control becomes an example of companionship between man and machine in the race of man vs. Machine further enhancing the technology to the next level from Speech recognitions to wireless hand gesture control technology.

## Introduction

In recent years, society is facing many sociological and financial challenges, so there is less time for the elderly or disabled persons. A full time caretaker may be required to continuously monitor these patients, which is not always possible due to social or financial constraints. Room functions such as light on/off, fan on/off, bed up/down are given on an integrated system in our project. We have used a 3-axis accelerometer ADXL335, which will be fitted on patient's wrist for performing hand-gestures. The patient simply has to move his hand to left, right, up, down to perform these functions. Also, by using Bluetooth module, we have developed an App that helps patient to call for help at urgent times. Buzzer is also provided in case the patient needs to alarm the nurse immediately. We have used comparator to compare the values for every hand-gesture. We have used controller on receiver side of our circuit to process the data. Following are the valid output conditions that will give the corresponding motion:

| OUTPUT 1 | OUTPUT 2 | OUTPUT 3 | OUTPUT 4 | CONDITION            |
|----------|----------|----------|----------|----------------------|
| 1        | 1        | 1        | 1        | NEUTRAL/STOP         |
| 0        | 1        | 1        | 0        | BED UP               |
| 1        | 0        | 0        | 1        | BED DOWN             |
| 1        | 0        | 1        | 0        | LIGHT ON/OFF         |
| 0        | 1        | 0        | 1        | FAN ON/OFF           |
| 1        | 0        | 1        | 1        | CALL                 |
| 1        | 1        | 1        | 0        | MESSAGE/SMS(INBUILT) |

## Components & Software

### TRANSMITTER COMPONENTS:

- Accelerometer ADXL335(Linear)
- Comparator-LM339(4 inbuilt comparators)
- HT12E(2~12 Series)Encoder
- RF Transmitter

### SOFTWARE USED:

- Kell uVision 3
- SP200
- MIT App Inventor

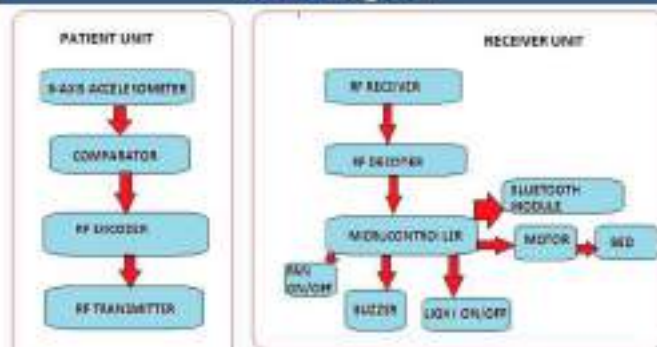
### RECEIVER COMPONENTS:

- Microcontroller
- RF receiver
- HT12D Decoder
- Buzzer
- DC Motor driver(5-9V Operating range)
- HC-05 Serial Bluetooth module
- LEDs
- 16\*2 LCD Display

## Circuit with bed & fan (Dummy model)



## Block Diagram



## Circuit



Transmitter circuit

Receiver circuit

## Key points

- Due to 8-bit address and 4-bit data bits in encoder-decoder, 2^4\*8 possible address combinations for each encoder-decoder configuration are available. Thus, 2^4\*8 different devices will work on our project.
- Power switch is used to give supply, hence power consumption is very less.
- Wireless makes ease of operation.

## Results



Output demo (for Light on condition)

## Conclusion

Thus we made patient assistance system more enhanced in our project with sensors and bluetooth module. In our project, we gave 4 functions to assist the patient: Light on/off, Fan on/off, Bed up/down and along with these, we also gave calling/SMS facilities using bluetooth module through MIT application. This can be enhanced by putting various sensor based commands such as controlling temperature, and many more other basic facilities.

## Contact

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Email: p.sanmesh@gmail.com

## References

1. Gupta Lark, Sasi Medhi "Automatic bed position control based on hand gesture recognition for disabled patients", Automatic Control and Dynamic Optimization: Techniques (ACADOT), International Conference 5-10 Sept 2005.
2. Bardi, Razi, Rezaei, Linares "Research and development of a gesture-controlled robot manipulator system" Multisensory Fusion and Integration for Intelligent Systems (MFIS 2016) IEEE International Conference on 19-21 sept 2016
3. Tawfik "A motion control method of intelligent wheelchair based on hand gesture recognition" Indian Journal of Electronics and Applications (IJEA), 2013 IEEE Conference on 15-17 June 2013

**UNIVERSITY RESULTS:**

## SEM III:

| Sr. No. | SUBJECT                             | STUDENTS APPEARED | STUDENTS PASSED | PASS % |
|---------|-------------------------------------|-------------------|-----------------|--------|
| 1       | Applied mathematics III             | 72                | 65              | 90.2%  |
| 2       | Electronic Devices and Circuits-I   | 71                | 33              | 46%    |
| 3       | Digital System Design               | 71                | 68              | 89%    |
| 4       | Circuit Theory and Networks         | 70                | 61              | 87%    |
| 5       | Electronics Instrumentation Control | 72                | 65              | 90     |
| 6       | OOP using JAVA                      | 71                | 71              | 100    |

## SEM V:

| Sr. No. | SUBJECT                           | STUDENTS APPEARED | STUDENTS PASSED | PASS % |
|---------|-----------------------------------|-------------------|-----------------|--------|
| 1       | Microcontrollers and Applications | 73                | 69              | 95%    |
| 2       | Analog Communication              | 73                | 73              | 100%   |
| 3       | Random Signal Analysis            | 74                | 64              | 86%    |
| 4       | RF Modeling and Antennas          | 71                | 71              | 100%   |
| 5       | Integrated Circuits               | 73                | 70              | 96%    |

## SEM VII:

| Sr. No. | SUBJECT                            | STUDENTS APPEARED | STUDENTS PASSED | PASS % |
|---------|------------------------------------|-------------------|-----------------|--------|
| 1       | Image and Video processing         | 73                | 69              | 94.5%  |
| 2       | Mobile Communication               | 73                | 67              | 91.7%  |
| 3       | Optical Communication and Networks | 73                | 69              | 94.5%  |
| 4       | Microwave and Radar Engineering    | 73                | 67              | 91.8%  |
| 5       | Data Compression and Encryption    | 73                | 67              | 91.8%  |

**RESULT ANALYSIS****UNIVERSITY RESULTS:****SEM IV:**

| Sr. No. | SUBJECT                                 | STUDENTS APPEARED | STUDENTS PASSED | PASS % |
|---------|---|-------------------|-----------------|--------|
| 1       | Applied mathematics IV                  | 71                | 61              | 85.92% |
| 2       | Electronic Devices and Circuits-        | 70                | 60              | 85.71% |
| 3       | Linear Integrated Circuits              | 70                | 49              | 70%    |
| 4       | Principles of Communication Engineering | 70                | 69              | 98.57% |
| 5       | Signals and Systems                     | 71                | 56              | 78.87% |

**SEM VI:**

| Sr. No. | SUBJECT                             | STUDENTS APPEARED | STUDENTS PASSED | PASS % |
|---------|-------------------------------------|-------------------|-----------------|--------|
| 1       | Digital Communication               | 73                | 69              | 94.52% |
| 2       | Discrete Time Signal Processing     | 73                | 71              | 97.26% |
| 3       | Computer Communication and Networks | 73                | 68              | 93.15% |
| 4       | Television Engineering              | 73                | 68              | 93.15% |
| 5       | Operating Systems                   | 73                | 67              | 91.78% |
| 6       | VLSI Design                         | 73                | 68              | 93.15% |

**SEM VIII:**

| Sr. No. | SUBJECT                              | STUDENTS APPEARED | STUDENTS PASSED | PASS % |
|---------|--------------------------------------|-------------------|-----------------|--------|
| 1       | Wireless Networks                    | 74                | 73              | 98.65% |
| 2       | Satellite Communication and Networks | 74                | 70              | 94.59% |
| 3       | Internet and Voice Communication     | 74                | 73              | 98.65% |
| 4       | Telecom Network Management           | 74                | 74              | 100%   |

## DEPARTMENTAL ACCOLADES



**Prof. T.P. Vinutha**

**Published Technical Paper**

D. Gudi, T.P. Vinutha and P.Rao, "Discrimination of Sitar and Tabla strokes in Instrumental concerts using spectral features", *Frontiers of Research in Speech & Music*, FRSM, 2017



**Prof. Rohan Borgalli**

Top-1 % in NPTEL online certification for course on "*Design for IoT*".

Top 5% in NPTEL online certification for course on "*Principles of Signals and Systems*"



**Prof. Shridhar Sahu**

**Published technical paper.**

Sushma Srivastava, Shridhar R. Sahu, Dr. S. S. Rathod "Computation and Analysis of Excitatory Synapse and Integrate & Fire Neuron: 180nm MOSFET and CNFET Technology" in *IOSR Journal of VLSI and Signal Processing (IOSR-JVSP)* Vol. 8, Issue: 1, Ver. 1, Page No. 60-72, (Jan - Feb 2018). ISSN: 2319-4200.

Top 5 % , in NPTEL online certification for course on "Integrated Circuits, MOSFET, Op-Amps and their Applications" and "Analog Circuits"



**Prof. Seema Kawale**

EXECOM Member of IEEE Bombay section. Chair, WIE Affinity group, IEEE Bombay Section. Selected as IEEE DAY 2018 Ambassador from IEEE Bombay section.

## DEPARTMENTAL ACCOLADES



### Jeet Dagha

- Chairperson, IEEE SAKEC.
- Social Media Coordinator, IEEE India Council Student Activities Committee.
- Young Professional Representative, Bombay Section- IEEE Computer Society India Young Professional Team.
- Ambassador, IEEE Day 2017.



### Shravan Shetty

- IEEE Xtreme 11.0 Ambassador which is a 24 hours online coding competition that takes places globally every year.
- Only Student to be selected for IEEE Bombay section to promote WIE development in IEEE Asia Pacific Region.
- Website co-ordinator for IEEE Bombay section SAC 2017-18.
- Interned as Front-end website developer at NxtStack.



### Nemeen Shah

- Secured second position in Robo Wars semi-final held in Goa.
- Has a successful YouTube channel "Nematic !" dedicated to circuit design.
- A few of his projects include power bank, LED matrix, Arduino and Raspberry Pi based projects

## TORSCHÉ SCHEDULING TOOLBOX USING MATLAB

-Prof. Gauri Chavan  
gauri.chavan@sakec.ac.in

TORSCHÉ (Time Optimization of Resources, Scheduling) is a MATLAB-based toolbox. It is a freely (GNU GPL) available toolbox used to show the scheduling of different algorithms for off-line & on-line scheduling problems[1]. Scheduling of different task is essential in various fields now days. It's importance is more in recent years. This tool provides the scheduling in different areas like monoprocessor/dedicated processors/parallel processors, cyclic scheduling and real-time scheduling. The TORSCHÉ toolbox provides the basic data structures and methods for the development mainly in the area of scheduling. If you want the solution of specific optimization problem then you can use the toolbox for the implementation. Algorithms are simply implemented as Matlab functions with fixed structure allowing users to implement new algorithms[2].

### Steps to solve Scheduling Problems:

Solving procedure of scheduling problem can be divided into four basic steps:

1. Define task
2. Define a set of tasks.
3. Define the scheduling problem.
4. Run the scheduling algorithm.

### Scheduling of Earliest Deadline First using Horn Algorithm

Horn Algorithm is used to solve the problem of scheduling with a set of n independent tasks, when tasks may have dynamic arrivals and preemption is allowed. If tasks are not synchronous but can have arbitrary arrival times i.e. tasks can be activated dynamically during execution, then preemption becomes an important factor. In preemptive scheduling algorithm, the scheduler interrupts the currently executing task in order to meet its own deadline.

### Horn's Algorithm:

Given a set of n independent tasks with arbitrary arrival times, any algorithm that at any instant exceeds the task with the earliest absolute deadline among all the ready tasks is optimal with respect to maximum lateness [2]. The problem object for Horn's Algorithms is given as

$$p = \text{problem} (^1 | \text{pmtn}, r_j | L_{\text{max}})$$

where  $L_{max}$  is the optimality criterion that is maximum lateness. '1', indicates it is single processor system, 'pmtn' is used for preemption indicates all jobs are preemptive and 'rj' indicates release time of task.

### Earliest Deadline First Algorithm

EDF is one of the dynamic priority algorithms. In dynamic priority algorithm, the priority of a task can change during its execution. In EDF the priority of a job is inversely proportional to the absolute deadline i.e. the highest priority of a job is the one with the earliest deadline [3]. If two tasks have the same absolute deadlines, then chose one of the two at random if release times are same. If release times of two jobs are different then arrange the job which has earliest deadline. The priority is dynamic since it changes for different jobs of the same task. An optimality criterion of EDF is based on maximum Lateness  $L_i$  [3]. To get the schedule of Earliest Deadline First we can use Horn's Algorithm.

The following program illustrates the schedule of three tasks for Earliest Deadline First using Horn Algorithm in MATLAB using TORSCHÉ toolbox.

```
t1 = task('task1', 5, 1, inf, 12) // define task 1 and its parameters
//Processing time: 5
//Release time: 1
//Due date: 12
//deadline : infinity
t2 = task('task2', 2, 0, inf, 11); // define task 2 and its parameters
t3 = task('task3', 3, 5, inf, 9); // define task 3 and its parameters
T = taskset([t1 t2 t3]) // define taskset of 3 tasks
p=problem('1|pmtn,rj|Lmax') // define problem for maximum late-
ness criteria
TS = horn(T,p) // define Horn's Algorithm
plot(TS) // Plot of schedule
```

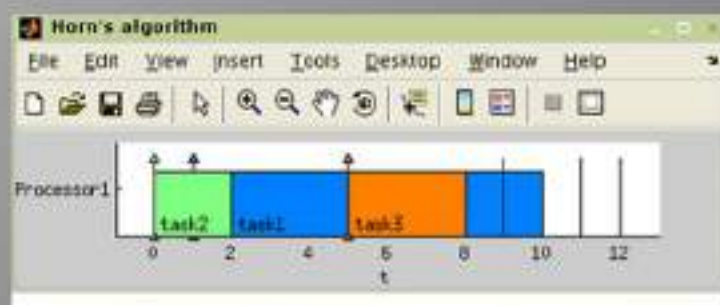


Figure 1: Schedule of EDF using Horn Algorithm

The above program has three tasks  $T_1$ ,  $T_2$  and  $T_3$ . For the Earliest deadline First schedule, we used the maximum lateness criteria. EDF minimizes maximum lateness. If  $L_{max} < 0$  then none of the task exceeds its deadline.  $L_{max}$  is the maximum lateness which is calculated by  $L_i = C_i - d_i$  the difference between the completion time of the task and the deadline of the task. Horn's algorithm orders the ready queue by increasing the absolute deadline, it means that it minimizes the maximum lateness. So Horn's Algorithm is used to schedule different tasks under Earliest Deadline First Scheduling.

#### **REFERENCES:**

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- [2]<http://rttime.felk.cvut.cz/scheduling-toolbox/manual/introduction.php>
- [3]“Real-Time Systems” by Jane W.S. Liu, Pearson Education.


# Soultalk

## “MOTIVATE WHEN YOU’RE DEMOTIVATED”

“PROBLEMS AND PHASES COME AND GO, BUT THEY’RE NEVER BIGGER THAN THE AMAZING PERSON LIVING WITHIN YOU”

-SHAIKH MOHAMMAD SALMAN (TE-7)

salman.shaikhmohammad@sakec.ac.in

 @micromotivation

Being a motivational speaker I’m always asked about how do I keep myself motivated when the world tries to put me down. What do you do when things don’t go the way you wanted and what does it take to stay calm and silent when you want to scream it all out?

Well, the answer’s not that easy to explain but if you can understand its depth and audacity you might end up being an amazing person within yourself. There are 2 things I do:

Number one, I write stuff to express my thoughts because you’ll then understand that the pain you want to express is just a paragraph or so. I bet you that if you try to write it down it won’t be more than a page. Just a page! A page that can never describe your sentiments your feelings, your emotions and the intensity of it. This happens to us because we don’t know yet the power of expressions in the right time and moment. Once you realize this you’ll understand there are billions of other lives with more than a page to express, probably more than a whole chunked book. So you all need to understand that none of our problems are as big as we imagine. Even if your parents want to kick you out of home, it is nothing in front of those innocent lives in danger, constantly living in fear of death in the Far East nations. So stop crying for your problems, it’s just a phase and I’m sure after you read it all you’ll learn the lesson.

Secondly, I always try to motivate others when I’m demotivated. This concept came to me when I was broken from inside but even then I tried my best to help someone out. That way I learned my problems to be nothing and somehow while speaking I found motivation for myself. Even while I’m writing this article I’m slightly demotivated. But all that matters is that we be empathic enough to understand this world and also foolish enough to learn new thoughts and feelings every day.

## OOTY - A MEMOIR

By : Vinit Veera (BE7)

vinit.veera@sakec.ac.in

I felt my lungs inflate with the onrush of scenery - air, mountains, trees, people. I thought, "This is what it is to be happy."

- Sylvia Plath, A Bell Jar

All set and packed I boarded the train to Coimbatore. After a journey of 36 hours I reached Coimbatore Junction. Not wasting much time I headed towards the final destination, Ooty. The journey from Coimbatore to Ooty is pure bliss. The green lawns in the Coimbatore plain, view of the valley as you ascend and the Nilgiri forests, it is all scenic. It was almost 4 o'clock by the time I reached there. I can't forget how beautiful the evening was that day. The sky - in a shade of orange perfectly interlaced with blue and a few twinkling stars, the little vibrantly coloured city houses in the backdrop, the cool breeze rushing past me and above all the tiny lights from distant houses in the hills. It seemed surreal.

I woke up the next day expecting much more from Ooty. I took an auto rickshaw and set out towards Pykara Lake. After reaching there, I hopped into a boat and set off. The lake so huge and the water so clear and along with all this, the gigantic Nilgiri trees that rise high in the blue sky as if they are mocking the clouds. The gushing wind and tiny droplets of water spraying on the face, boat ride rejuvenated me. That night I slept like a baby; no worries and free of all thoughts.





If I had to describe the journey in just three words it would be, 'Blue and Green'. Along the entire route, there were lush green tea gardens on the hill slopes, the -plains at their feet, little houses in clusters and the clear blue sky above them all. I wondered that how the different shades of blue and green and a tinge of other colours made something look so spectacular. The train came to halt at Coonoor and I offloaded. Lamb's Rock, Dolphin's Nose and the Tea Gardens were some of the places I visited. All of them were equally amazing.

It was my last day in Ooty. I remembered the rickshaw driver saying, "Sir, if you've come this far and if you liked Pykara, you must not miss out on Avalanche." And so I was on my way to Avalanche. Initially, as the bus was moving I didn't like the place as much as Pykara. I spotted a narrow stream of water which was moving in the same direction our bus was moving. The stream was broadening as we were moving. And soon, the entire bus exclaimed "WOW !!!". Spellbound. It was the Avalanche lake. The lake was nothing like I had seen. The water had two different shades, teal at the beginning and turquoise at the far end. It stretched into infinity. I just stood there, staring and breathing, inhaling to the extent where my lungs couldn't take in anymore air. It was nature in its purest form. Three words - Simple, Soothing and Serene. Getting back at the hotel I packed my bags for the next day, I had a train back to Mumbai.

I took a cab, put my luggage in the trunk and with a smile on face I set out for Coimbatore. The next day after getting back home, the Mumbai life began, hustling past the city chaos and surviving. I've heard my elders saying, "One realises the value of a thing after he has lost it." Although I hadn't lost Ooty, I still miss it. It is rightly called 'THE QUEEN OF NILGIRIS'.



# Convocation 2018



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**ACADEMIC YEAR 2017- 18**

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**Dhruvi Shah**  
CGPA : 9.825



**Shubham Pawar**  
CGPA : 9.685



## **Third Year**



**Ramashish Gupta**  
CGPA : 9.21



**Himanshu Rasal**  
CGPA : 9.2

## **Final Year**



**Anuj Jain**  
CGPA: 9.31



**Dheeraj Naidu**  
CGPA : 8.74



## Felicitation of the Toppers of First Year (2016 -17)

# Congratulations



## Felicitation of the Toppers of Second Year (2016-17)

# Congratulations



*Felicitation of the Toppers of Third Year (2016-17)*

# *Congratulations*





# NPTEL TOPPERS

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|                    |          |                |         |
|--------------------|----------|----------------|---------|
| Online Assignments | 20.75/25 | Proctored Exam | 70.5/75 |
|--------------------|----------|----------------|---------|

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Head COSEP & NPTEL Coordinator  
IIT Bombay

Feb-Mar 2018  
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| Online Assignments | 20.25/25 | Proctored Exam | 54/75 |
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|--------------------|---------|----------------|-------|
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|--------------------|---------|----------------|-------|

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Prof. T. V. Prabhakar  
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for successfully completing the course  
**Enhancing Soft Skills and Personality**  
with a consolidated score of **83 %**

|                    |          |                |          |
|--------------------|----------|----------------|----------|
| Online Assignments | 22.25/25 | Proctored Exam | 60.75/75 |
|--------------------|----------|----------------|----------|

*T. V. Prabhakar*  
Prof. T. V. Prabhakar  
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Total number of candidates certified in this course: **2840**

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NPTEL Coordinator  
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# *PAPER QUILLING and PAINTING*

Work by: Anisha Dhakate (TE7)

[anisha.dhakate@sakec.ac.in](mailto:anisha.dhakate@sakec.ac.in)



# *Soul Sisters*

-Prof. Seema Kawale

[seema.kawale@sakec.ac.in](mailto:seema.kawale@sakec.ac.in)

*Going to another country,  
Was the fear in my mind!!  
But you took care of me there,  
By being humble and kind!!*

*I have never felt so homely  
At any other places before!  
This is the only reason,  
I want to meet you once more!!!*

*The time we have shared,  
Covered many discussions!!  
From movies to music,  
From the rock to the fusion!!*

*The memories we created,  
Will make our bond stronger!!  
This is the start of our journey,  
But friendship will remain forever !!!*

*I will always wish to the god,  
You will become successful!!  
You are and you will,  
Always remain beautiful!!*


## Program Educational Objectives

- 1.To produce Electronics & Telecommunication engineers, having a strong theoretical foundation, good design experience and exposure to research and development.
2. To develop an ability to identify, formulate and analyze technical concepts to solve engineering problems in the latest technology from application to product design.
- 3.To prepare them for graduate studies and successful career in industry to meet needs of Indian and multinational companies.
4. To inculcate team spirit to work on multidisciplinary projects, with ethics and codes of professional conduct.

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