MAHAVIR EDUCATION TRUST'S
SHAH AND ANCHOR KUTCHHI ENGINEERING COLLEGE
DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION ENGINEERING

COMMUNIQUE

ISSUE 3, JULY 2020

EXTC Communique

From the HOD's Desk

"The objective of education is to prepare the young to educate themselves throughout their lives."
- Robert M. Hutchins

It gives me immense pleasure to present the third edition of Communique that showcases the efforts of the department in enhancing the skills in students to groom them up as professionals. With the objective to empower our students with overall development, our team has conducted various workshops, industrial visits, guest lectures gelling up with the students. Visit to ISRO stood as the pinnacle of this year's activities that motivated and shaped students' dreams, which can act as a stepping stone to their bright career ahead. Series of skill development activities involving self-learning and guided-learning modes with alumni gave a different direction to teaching-learning methodology!

I congratulate the whole team for their innovative ways and whole hearted correlated efforts they put in!!

-T. P. Vinutha
I/C Head of Department
Department of Electronics & Communication Engineering
SAKEC

Table of Contents

01 Meet the Faculty

03 Departmental Events

11 Departmental Accolades

20 Result Analysis

22 Meritorious Students

23 Convocation Batch of 2019

25 Let's Talk Tech

34 Let's Unwind

42 A trip down memory lane

45 Editorial Team

Meet the Faculty

T P Vinutha
I/C HOD & Asst. Professor
(Digital Signal Processing, Audio Signal Processing, Pattern Recognition, Machine Learning)

Mamta Tikaria
Assisstant Professor
(Soft-computing techniques in Microwave Engineering, UWB Communication)

Rohan Borgalli
Assisstant Professor
(Signal Processing, Digital System Design and Quantum Computing)

Gauri Chavan
Assisstant Professor
(Real Time Operating Systems, Embedded Systems & Microprocessor Systems)

Uma Raj
Assisstant Professor
(MIMO and OFDM Communications, Communication Systems)

Shridhar Sahu
Assisstant Professor
(Analog and Mixed signal VLSI design, Digital VLSI design, Microelectronics)

Jagdish Sarode
Assisstant Professor
(Embedded Systems and Microprocessor systems)

Dr. Kalpana Chaudhari
Assisstant Professor
(Wireless Comunicatoin, Internet of Things, Community based projects under UN)

Ashish B. Tank
Assisstant Professor
(Computer Networking & Security)

Sujitha Kurup
Assisstant Professor
(Image processing and 3D modelling, Data Compression)

Seema Kawale
Assisstant Professor
(Mobile Communication, Image Processing, Neural Networks)

Bhushan Pawar
Assisstant Professor
(Wireless Communication, Antenna and Wave Propagation)

Gauri Deshpande
Assisstant Professor
(Digital Signal Processing, Speech and Image processing)

Rahul Khandare
Assisstant Professor
(Antenna design, IoT, Networking, Embedded Systems)

Shwetha Shetty
Assisstant Professor
(Digital Electronics & Communication, Control System)

Non - Teaching Staff

Shraddha Avachat
Lab Assisstant
(B.Sc. Electronics)

Tukaram Chavan
Lab Assisstant
(Diploma in Audio & Radio Servicing)

Minakshi Sansas
Lab Assisstant
(B.E. (EXTC))

Tanuja Mahajan
Lab Assisstant
(B.E. Instrumentation)

DEPARTMENTAL EVENTS

My experience with GRE and how I ended up choosing Germany

Department of Electronics & Telecommunication Engineering in association with Alumni Cell had organized an event on education abroad on 31st July, 2019 at 4 pm. Speakers of the event were BE pass out SAKEC students of 2018-19 batch Mr. Vinit Veera , EXTC Department; Mr. Aniket Prabhu, EXTC Department; Ms. Siddhita Bagwe, IT Department; Ms. Gauravi Tembulkar, IT Department. In this event, the speakers shared their experiences of preparing for GRE and application to universities in USA, Canada and Germany. Furthermore, the speakers shared tips on how to crack GRE based on their experience. It was co-ordinated by Mr. Rohan Borgalli, Assistant Professor, Electronics & Telecommunication Engineering Department and SAKEC students from all the departments attended the event.

Drone Development workshop

Department of Electronics & Telecommunication Engineering in association with IETE-SAKEC had organized "Drone Development workshop" by WeCan Educational Organization in association with Drona Aviation, IIT Bombay on 9th - 10th August 2019.

In the workshop following topics were covered:

1. Understanding of Drone BASICS
2. Concept of Aerodynamics
3. Electronic System Interfacing
4. Programming with IDE-CYGNUS
5. Assembling and Flying the Drone

The above hands-on-workshop and competition had a huge response from SAKEC students and also from other college students.

The event was successfully conducted, the workshop also featured a competition at the end, whose winners were:

1. Diksha Pawar
2. Trushti Chotaliya
3. Atharva Juikar
4. Shalin Gund

The event was concluded by certificate distribution to the winners as well as all participants and a Vote of Thanks was given to the knowledgeable speakers.

Skill Development Workshop

"Skills are what a person can achieve on his/her own or in a team. Today, many students lack these essential qualities that are required for the professional world". Hence, Department of Electronics & Telecommunication Engineering conducted an event on Skill Development for the current third year students which was conducted on 15th September 2019. The event was coordinated by Ms. Gauri Chavan with the help of Ms. Uma Raj, Ms. Seema Kawale, Mr. Deepak Mishra, Ms. Shweta Shetty. Mr. Vinit Veera, an alumni, enlightened the audience with a presentation on "Soft Skills" and how it is important not only in the professional world but also in day-to-day life. It was then followed by a session on "Aptitude test" conducted by Mr. Rahul Mehta, BE EXTC student who covered the basics of an aptitude test, why it is needed and how to crack it. Mr. Himanshu Rasal, an alumni, conducted an interactive lecture on "C programming language" the most basic industry demanding programming languages. He also covered some of the questions that were asked not only in aptitude tests but also in interviews. The next speaker was Ms. Dhruvi Shah, BE EXTC student who took an in-depth session on "SQL" where she explained from scratch about databases, ER model as well as working with databases and different SQL queries. Mr. Krishnakanth, an alumni, gave a session on "Java programming" where he explained what is Java, its importance, certain features and principles. The final speaker for the day was Mr. Neil Karania, BE EXTC student who took a session on "Networking & OS" where he explained about IP, how it works, and also the fundamentals of OS.

The event concluded with a thank you note from Prof. Gauri Chavan and a token of appreciation was given to all the speakers.

Faculty Development Programme on "Gamification"

IEEE Bombay section in association with IEEE SAKEC and Department of Electronics Engineering and Electronics & Telecommunication Engineering organized a faculty development program on "Gamification" by Dr. Fakhrul Hazman Yusoff, Faculty of Universiti Teknologi MARA, Malaysia on 16th October 2019 at 3 PM. Around 50 Faculties including all departments actively participated in the above event. In his session, he gave information about how gamification can be used for our daily work which will make people more interested and the results of such experiments were shown with the help of several videos. Dr. Fakhrul also showed the Industrial revolution 5.0 from Japan which took care of human emotions along with technology. Through many interesting videos, Dr. Fakhrul took us through the industrial revolution all around the world.

IETE Innovation Meet (IIM)-2019

The IETE Mumbai Centre successfully conducted Innovation Meet-2019 on October 22, 2019 at Shah & Anchor Kutchhi Engineering College. The theme of IETE Innovation Meet was the Advances in RF measurements and to provide opportunity to the academicians and students to update themselves, interact with experts and showcase their project or work ideas.

The event was inaugurated by eminent personalities such as chief guest Mr. Jayant Potdar; V P Reliance properties, Dr. KTV Reddy; past President IETE, Dr. J. W. Bakal; President IETE New Delhi, Dr. Bhavesh Patel; Principal SAKEC, Dr. S. S. Thakur; Chairman IIT Mumbai Centre, Mr. Parag Walinjkar; Secretary IETE Mumbai Centre. A number of other dignitaries of IETE and Industry had also graced the occasion. Celebration started with lighting of the lamp by dignitaries and recital of Saraswati Vandana. In his welcome address and opening remarks, Dr. S. S. Thakur extended deepest gratitude to the chief guest and dignitaries for gracing the occasion with their kind presence. Dr. Bhavesh Patel gave an elaborate speech on how institutes are playing a vital role in innovations today and emphasized on technological innovations to change life in the future. Dr. K. T. V. Reddy highlighted on how innovation meet started and role of IETE in innovation in the field of technology.

Chief guest Mr. Jayant Potdar delivered his inaugural address which focused on how the innovations are changing the industry dynamics and human life. The IIM started with a seminar by Mr. Kartik Parikh from Fastech Telecommunications which he briefed on Radiated RF measurements and scope of work in this area. The second seminar was conducted by Mr. Anish Murthy, RF Design Engineer from Anirtsu, he briefed about RF Measurement Technology and various instruments used to carry out RF measurements.

In the afternoon session, project competition was conducted where more than 60 students and researchers exhibited their work and ideas. The event was judged by experts from the industry and academics, Mr. J R Nikahade and Mr. Karnani. They selected the top 3 winner projects and 3 consolation prize winners for IIM 2019. Finally, the IIM was concluded with prize distribution ceremony and a vote of thanks.

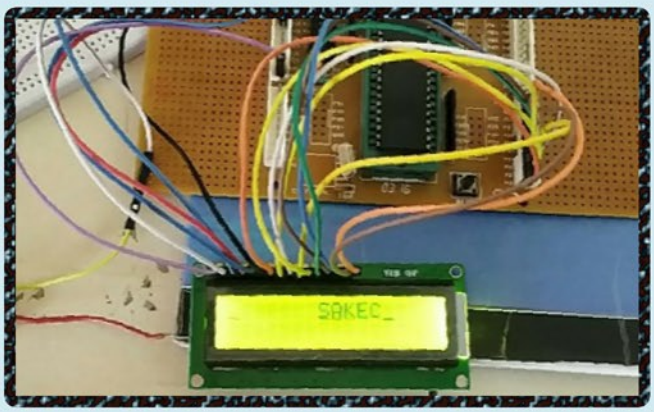
Hands on Workshop of Microcontroller Programming Skill Development

"Five days Hands on Workshop of Microcontroller Programming Skill Development" was organized by Electronics & Telecommunication Engineering Department in collaboration with IETE SAKEC from 9th December 2019 to 13th December 2019. The workshop's inauguration was done by Prof. T.P Vinutha, H.O.D. EXTC department. The hands-on sessions were conducted by Ms. Gauri Chavan, Mr. Jagdish Sarode and Dr. Kalpana Chaudhari.

In the workshop key points that were highlighted are:

1. Architecture and Hardware components of Microcontroller
2. Microcontroller programming skills using assembly language and C programming
3. Keil and Proteus Software
4. Various input and output interfacing with Microcontroller.

During the five-day workshop, Ms. Shweta Shetty and Ms. Gauri Deshpande maintained coordination with all participants and speakers and also guided the students in the practical sessions of the workshop. The supporting staff Ms. Minakshi Sanas, Mr. Tukaram Chavan, Ms. Shradhha Avachat helped to check microcontroller kits, installation of Keil software & maintain laboratory during workshop. The collective efforts of everyone made this event a grand success.



INDUSTRIAL VISIT 2020

IETE-SAKEC Student Chapter in collaboration with Electronics & Telecommunication Department and IIC 2.0 of Shah & Anchor Kutchhi Engineering College had organised INDUSTRIAL VISIT 2020 on 2nd to 9th January, 2020 to ISRO Telemetry Tracking and Command Network (ISTRAC), Bangalore; Visvesvaraya Industrial And Technological Museum (VITM), Bangalore; Centre For Development Of Advanced Computing (C-DAC), Bangalore and Pondicherry.

ISTRAC is entrusted with the major responsibility to provide tracking support for all the satellite and launch vehicle missions of ISRO. The major objectives of the centre are to carry out mission operations of all operational remote sensing and scientific satellites and provide them Telemetry, Tracking and Command (TTC) services from launch vehicle lift-off till injection of satellite into orbit, also estimate its preliminary orbit in space and hardware and software developmental activities that enhance the capabilities of ISTRAC for providing flawless TTC and Mission Operations service.

Mr. B Sankar Madaswamy, Scientist/Engineer-SF, Manager, HRD, ISTRAC, Bengaluru, briefed about the ISTRAC and its operations. Students gained knowledge about the orbital path of Mars mission and were motivated to participate and contribute towards space research programs of India. VITM, a constituent unit of National Council of Science Museums (NCSM), Ministry of Culture, Government of India, was established in memory of Bharat Ratna Sir M. Visvesvaraya. A modest building with a built-up area of 4000 sq. mtrs. was constructed in the serene surrounding of the Cubbon Park, housing various industrial products and engines, VITM visit has strived to fulfil its objectives of stimulating creativity, innovation ideas among SAKEC students which would fuel them to reach new heights in their careers in the field of Engineering.

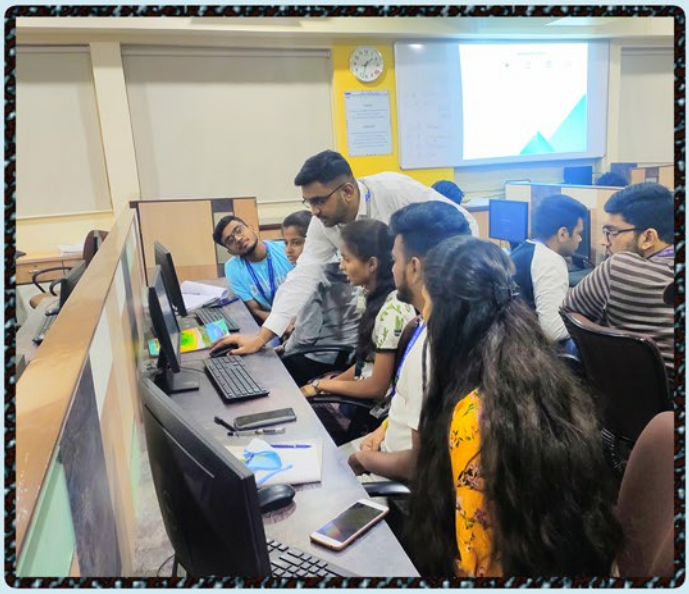
C-DAC, Bangalore is the premier R&D organization of the Ministry of Electronics and Information Technology (Meity) for carrying out R&D in IT, Electronics and associated areas. Different areas of C-DAC had originated at different times, many of which came out because of the identification of opportunities. The setting up of C-DAC in 1988 itself was to build Supercomputers in context of denial of import of Supercomputers by USA. Since then, C-DAC has been undertaking the building of multiple generations of Supercomputers starting from PARAM with 1 GF in 1988. Students learnt all technical aspects through the C-DAC visit.

Total 54 students from FE to BE, from all departments participated in the Industrial Visit. They got an opportunity to experience the practical aspect of their academics and this visit also served as a special bonding time amongst students.

Introduction to RedHat Linux

SAKEC-ACM student chapter in collaboration with Electronics & Telecommunication Department and IIC 2.0 of Shah & Anchor Kutchhi Engineering College had organised an event on “Introduction to RedHat Linux” on 18th January, 2020 to sharpen skills and introduce new concepts to the students. Speaker of the event Mr Ashish Tank started the session with concepts of RedHat Linux OS. The students learned stepwise installation of VMware followed by mounting of RedHat Linux OS in it. They learned about different networking commands using RedHat Linux.

Total 41 students from SE & TE of all Departments participated in the event.



Microcontroller Programming Skill Development workshop: Winter 2019 Internship

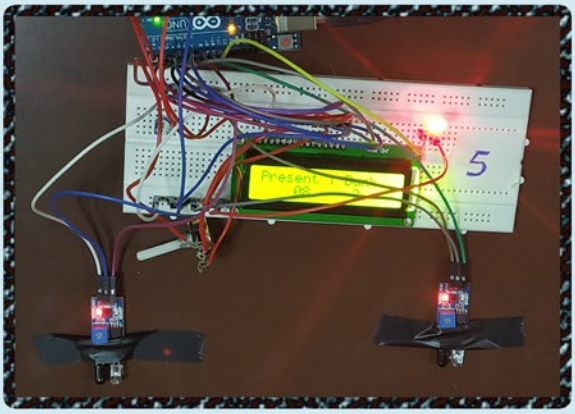
“Microcontroller Programming Skill Development workshop Winter 2019 Internship” was organized by Electronics & Telecommunication Engineering department in collaboration with E-Cell SAKEC from 16th December 2019 to 3rd January 2020 (3 Weeks). A total of 19 students participated during winter 2019 internship program. Students implemented projects based on 8051 Microcontroller and Arduino Uno. Students were mentored by Ms. Gauri Chavan, Mr. Jagdish Sarode, Dr. Kalpana Chaudhari, Ms. Gauri Deshpande, Ms. Shweta Shetty along with supportive staff Ms. Minakshi Sanas, Ms. Shradha Avachat and Mr. Tukaram Chavan. Valedictory function was conducted on 1st February 2020 at 2 PM in the 4th Floor auditorium. Principal, Dr. Bhavesh Patel, Dr. Vinit Kotak addressed the students along with EXTC Department HOD and ISF co-ordinator Prof. T.P.Vinutha. The students were appreciated with certificates which were presented to them by Dr. Bhavesh Patel, Dr. Vinit Kotak and Prof. T.P.Vinutha.

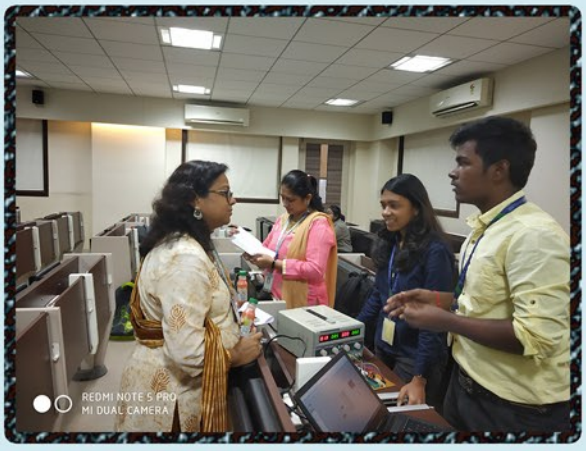
Microcontroller Programming Skill Development workshop Project Competition

"Microcontroller Programming Skill Development workshop Project Competition" was organized by Electronics & Telecommunication Engineering department in collaboration with ROBO CLUB SAKEC on 1st February 2020 at the 4th floor seminar hall. The event was coordinated by Ms. Gauri Chavan, Mr. Jagdish Sarode and Dr. Kalpana Chaudhari, Assistant Professors, Electronics & Telecommunication Engineering Department under the guidance of Prof. T. P. Vinutha, H.O.D of Electronics & Telecommunication Engineering Department.

Total of 22 students (10 groups) from second and third year of Electronics & Telecommunication Engineering Department participated in this competition. The event timings was from 10.00 AM – 2.00 PM.

Principal, Dr. Bhavesh Patel and Dr. V.C. Kotak graced the occasion. They addressed the students with their motivational words and appreciated them and the faculty for their efforts. Prof. Shubhangi Motewar, Assistant Professor Electronics Department and Prof. Archana Chaugale, Assistant Professor Information Technology Department were the judges. They evaluated the project based on three criteria: Hardware Implementation, Software Implementation and Project Presentation.





Three groups were selected by the judges. The first prize was declared for "Air Pollution Monitoring System" by Mrugank Tanna, Sanjay Bhanushali and Vipul Singh; second prize for "Automatic Railway Gate Control System" by Gore Ananya Ashish & Pathya Jageshwar K. and third prize for "Traffic Light Controller" by Omkar Maurya and Diksha Pawar.

Prizes and certificates were distributed to the participants by Dr. Bhavesh Patel, Dr. Vinit Kotak, Prof T.P.Vinutha, Prof Swati Nadkarni and Prof Jagdish Sarode.

At the end of the function students appreciated the efforts taken by the faculty members, they also appreciated the management for allowing them to utilize the college resources.

Online Project Poster Presentation Competition

In the testing times of quarantine Department of Electronics & Telecommunication Engineering in collaboration with IETE-SAKEC & IIC2.0 SAKEC conducted "Online Project Poster Presentation Competition" under Oscillation 2020 on 15/04/2020 using an Online platform. Nothing can stop engineering students from showcasing their talents and putting their best foot forward, not even a virus this deadly.

All B.E EXTC SAKEC students participated in the event and around 17 project groups presented their project work in the form of posters. Each project group was given 10 mins for presentation and a few more minutes for the question and answer session.
This event was conducted in 2 slots:

1. Morning: 11.00 Am - 1.30 Pm
2. Afternoon: 2.30 Pm - 6.00 Pm

The judges of the event were Ms. Shubhangi Motewar (Elex dept) and Ms. Archana Chaugule (I.T. dept). Around 80 people virtually attended the event which included all participating students, faculties and judges.
The winners of Online Project Poster Presentation Competition:

Neil Karania, Dhruvi Shah and Rahul Mehta
Project Title:- "Infinity Portal - One Platform for Everything"

Vidyesh Bondre, Shashank Chavan, Kiran Yadav and Meet Dave
Project Title:- "IoT based Smart Pothole Detection and Mapping System"

Aakash Patel, Bhavik Dandhukia and Chaitanya Chotalia
Project Title:- "IoT based Robot For Area Calculation"

Departmental Accolades

T P Vinutha
I/C HOD & Asst. Professor,
SAKEC

1. Our HOD T.P Vinutha was granted the Copyright IP India for her article, "Short Time Signal Analysis for Feature Extraction". In her work, parameters involved in time and frequency dimensions of short time spectral analysis have been explored for music signal in the context of application of percussion onset detection. Features like sub-band energy difference and spectral flux have characterized the percussion onsets fairly well.

This work has become a popular reference for other articles and is very informative.

Dr. Kalpana Chaudhari
Assistant Professor,
SAKEC

1. In 2019, she was selected as a member of the task force on knowledge and data science by Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) Secretariat. The meeting was conducted from 11 to 14 November 2019 at the UN Campus in Bonn, Germany.

2. She was invited as a presenter at GAPMIL Gothenberg, Sweden from 24-26 September, 2019.

   a. "Challenges and Opportunities for Media and Information Literate Citizens: Role of Communication Technologies for Informed, Engaged and Empowered Societies."

   b. "Mitigating Digital Disruptions in Neo- Urbanism through ICTs And Media Literacy: Synergies and Conflicts in implementing Sustainable Development Goals (SDGs)."

3. In 2019, her paper on UNITED NATIONS BES Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services was published in Research Gate.

4. In 2020, her article on “Global Risk Survey on Scientist Perceptions” was published in the book “Our Future on Earth 2020” which earned her the achievement of becoming a member of the Scientific Advisory Committee.

5. In February 2020, she was granted $1000 to travel to USA for the poster presentaions on:

a. “Societal Adoptions to Ocean and Climate Extremes: Application of Information and Communication Technologies for Governing and Sustaining Marine Food Chain in Indo-Pacific and Beyond”.

b. “Challenges and Opportunities in Preparedness for Climate and Ocean Extreme through Societal Participation: Contextualizing Data Science for Ocean and Marine Sustainability”.

Rohan Borgalli
Assistant Professor,
SAKEC

1. In 2019, Prof. Rohan Borgalli was awarded “Best Faculty of the Year” under sub-category Funded Research at the CSI TechNext India 2019 - Awards to Academia.

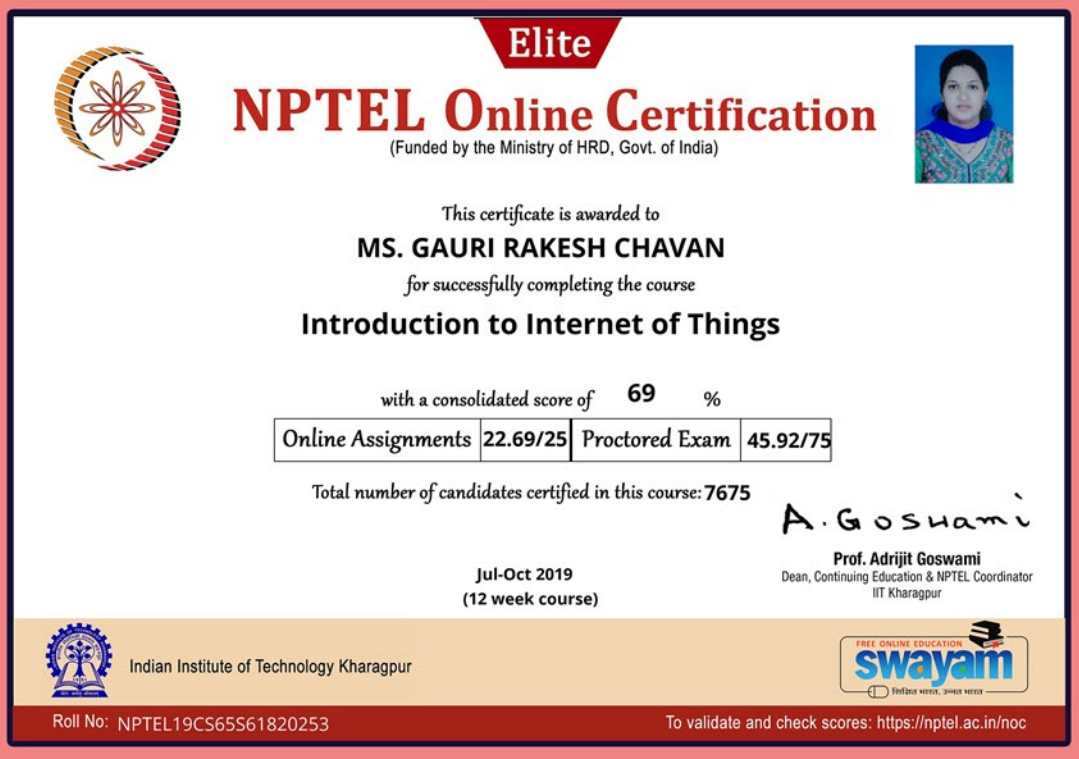
2. Prof. Rohan Borgalli was sanctioned a Minor Research Grant amount of Rs. 20,000 by the University of Mumbai Ref. No APD/237/601 of 2019 Research Project No: 134 entitled, “IoT based Smart Pothole Detection and Mapping System”.

3. In 2020, Prof. Rohan Borgalli’s paper on “An Effective Content Based Image Retrieval (CBIR) System based on Model Approach” was published in the International Journal for Scientific Research and Development.

Bhushan Pawar
Assistant Professor, SAKEC

1. In 2020, Prof. Bhushan Pawar was sanctioned a Research Grant amount of Rs. 25,000 by the University Grants Commission (UGC), for the Research Project, "IoT based Smart Video Surveillance System".

Gauri Chavan
Assistant Professor, SAKEC



Elite

NPTEL Online Certification

(Funded by the Ministry of HRD, Govt. of India)

This certificate is awarded to

MS. GAURI RAKESH CHAVAN

for successfully completing the course

Introduction to Internet of Things

with a consolidated score of 69 %

Online Assignments	22.69/25	Proctored Exam	45.92/75

Total number of candidates certified in this course: 7675

A. Goswami

Prof. Adrijit Goswami
Dean, Continuing Education & NPTEL Coordinator
IIT Kharagpur

Jul-Oct 2019
(12 week course)

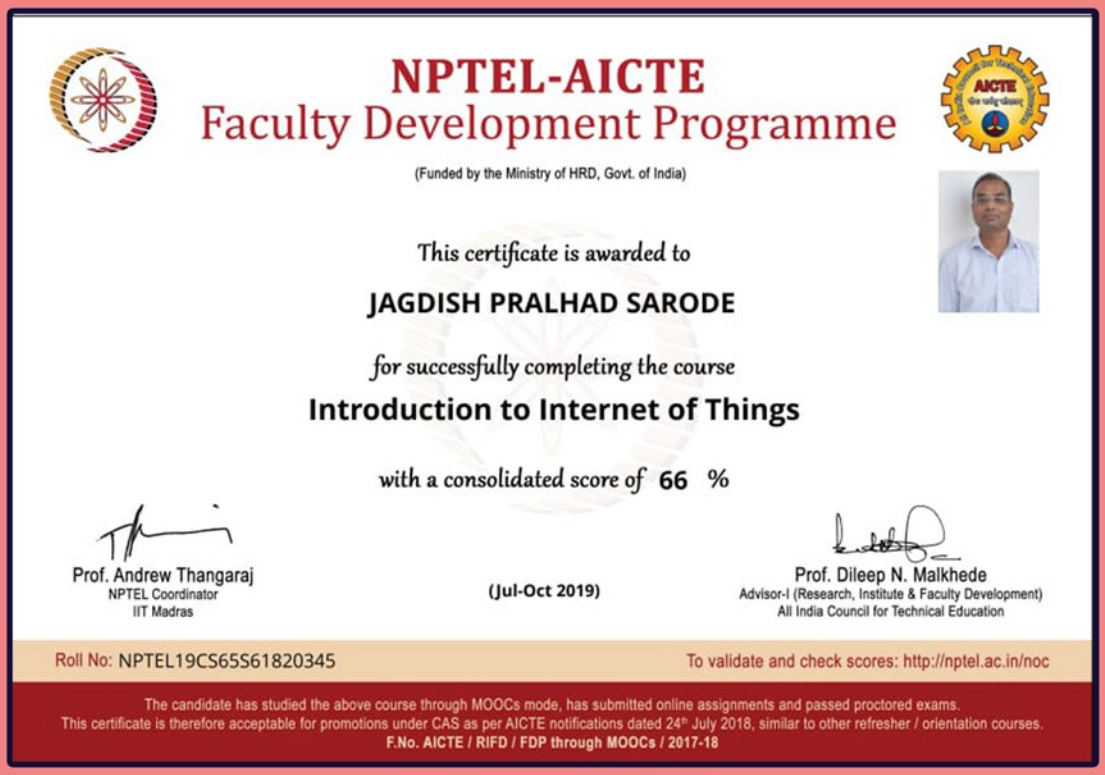
Indian Institute of Technology Kharagpur

FREE ONLINE EDUCATION swayam

Roll No: NPTEL19CS65S61820253

To validate and check scores: https://nptel.ac.in/noc

Jagdish Sarode
Assistant Professor,
SAKEC



NPTEL-AICTE
Faculty Development Programme

(Funded by the Ministry of HRD, Govt. of India)

This certificate is awarded to

JAGDISH PRALHAD SARODE

for successfully completing the course

Introduction to Internet of Things

with a consolidated score of 66 %

Prof. Andrew Thangaraj
NPTEL Coordinator
IIT Madras

(Jul-Oct 2019)

Prof. Dileep N. Malkhede
Advisor-I (Research, Institute & Faculty Development)
All India Council for Technical Education

Roll No: NPTEL19CS65S61820345

To validate and check scores: http://nptel.ac.in/noc

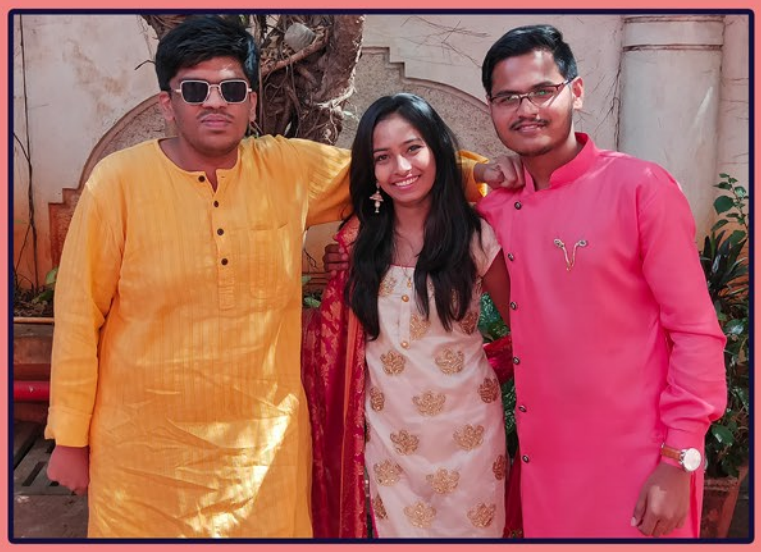
The candidate has studied the above course through MOOCs mode, has submitted online assignments and passed proctored exams.
This certificate is therefore acceptable for promotions under CAS as per AICTE notifications dated 24th July 2018, similar to other refresher / orientation courses.
F.No. AICTE / RIFD / FDP through MOOCs / 2017-18

Seema Kawale
Assistant Professor,
SAKEC

1. Mrs. Seema Bhagwan Kawale completed a course on Introduction to Cyber Security offered by SWAYAM with an amazing score of 84%.

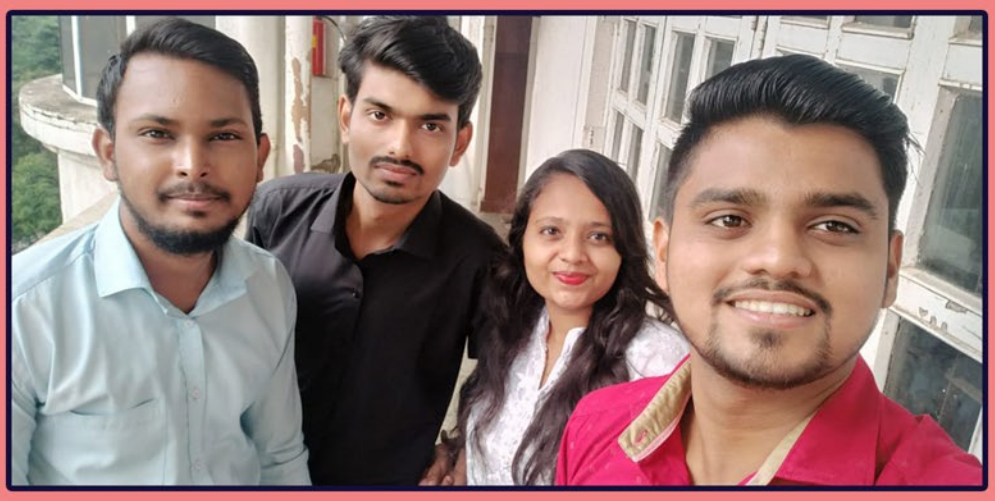
STUDENTS

1. B.E. Project Group of Shashank Chavan, Vidyesh Bondre and Kiran Yadav bagged the third position at the National level technical Project Poster competition "Technovation 2.0" conducted by the ISF (IETE students forum of E&TC dept, SCOE) on 9th April, 2020.



2. B.E. Project Group of Neil Karania, Dhruvi Shah and Rahul Mehta developed a Web application for the EXTC department which allows the department to conduct weekly online tests, keep a record of mentee as well as mentor data and a forum which can be used to post queries or promote events.
The project is hosted over the internet at
https://infinityportal.tech

3. B.E. Project Group of Rohit Gupta, Rajesh Kori, Swapnali Hambir and Ajit Upadhayay guided by Prof. Shridhar Sahu got their paper titled “Eye Controlled Wheelchair Using Raspberry Pi” published under the journal Social Science Research Network.



4. This lockdown gave students ample of time to learn new things & explore more into their interests. Making productive use of his time, Saurav Jha, a third year student, completed multiple online courses through Coursera.

The courses he completed are:

- Introduction to Structured Query Language (SQL)
- Programming for Everybody (Getting Started with Python)
- Python Basics

UNIVERSITY OF MICHIGAN

COURSE CERTIFICATE

05/12/2020

SAURAV AMRENDRA JHA

has successfully completed

Introduction to Structured Query Language (SQL)

an online non-credit course authorized by University of Michigan and offered through Coursera

Charles Severance
Clinical Professor, School of Information
University of Michigan

EDUCATION FOR EVERYONE · coursera · COURSE CERTIFICATE

Verify at coursera.org/verify/ZLDSAT2PA4RZ
Coursera has confirmed the identity of this individual and their participation in the course.

UNIVERSITY OF MICHIGAN

COURSE CERTIFICATE

05/10/2020

SAURAV AMRENDRA JHA

has successfully completed

Programming for Everybody (Getting Started with Python)

an online non-credit course authorized by University of Michigan and offered through Coursera

Charles Severance
Clinical Professor, School of Information
University of Michigan

EDUCATION FOR EVERYONE · coursera · COURSE CERTIFICATE

Verify at coursera.org/verify/WQSQDJT84PPR
Coursera has confirmed the identity of this individual and their participation in the course.

UNIVERSITY OF MICHIGAN

COURSE CERTIFICATE

05/07/2020

SAURAV AMRENDRA JHA

has successfully completed

Python Basics

an online non-credit course authorized by University of Michigan and offered through Coursera

Paul Resnick
Stephen Oney
Jaclyn Cohen

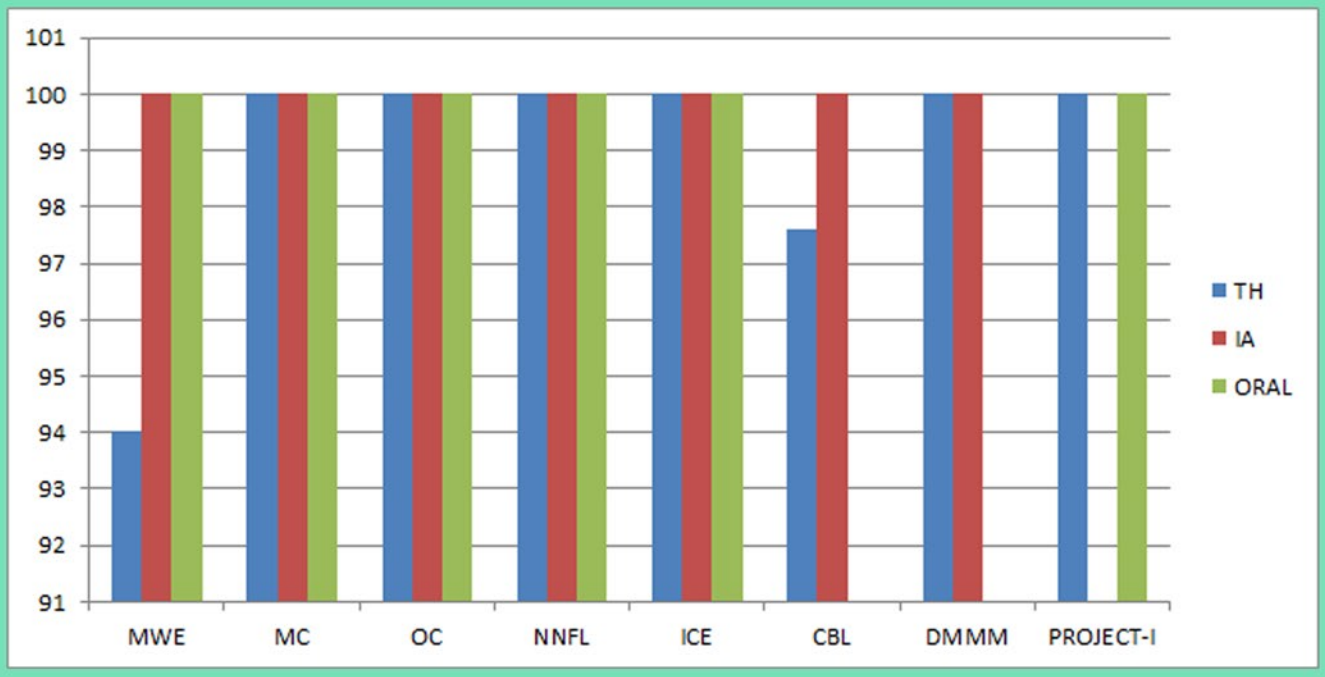
EDUCATION FOR EVERYONE · coursera · COURSE CERTIFICATE

Verify at coursera.org/verify/G3PRBB7MUJAR
Coursera has confirmed the identity of this individual and their participation in the course.

ACADEMIC YEAR: 2019-20

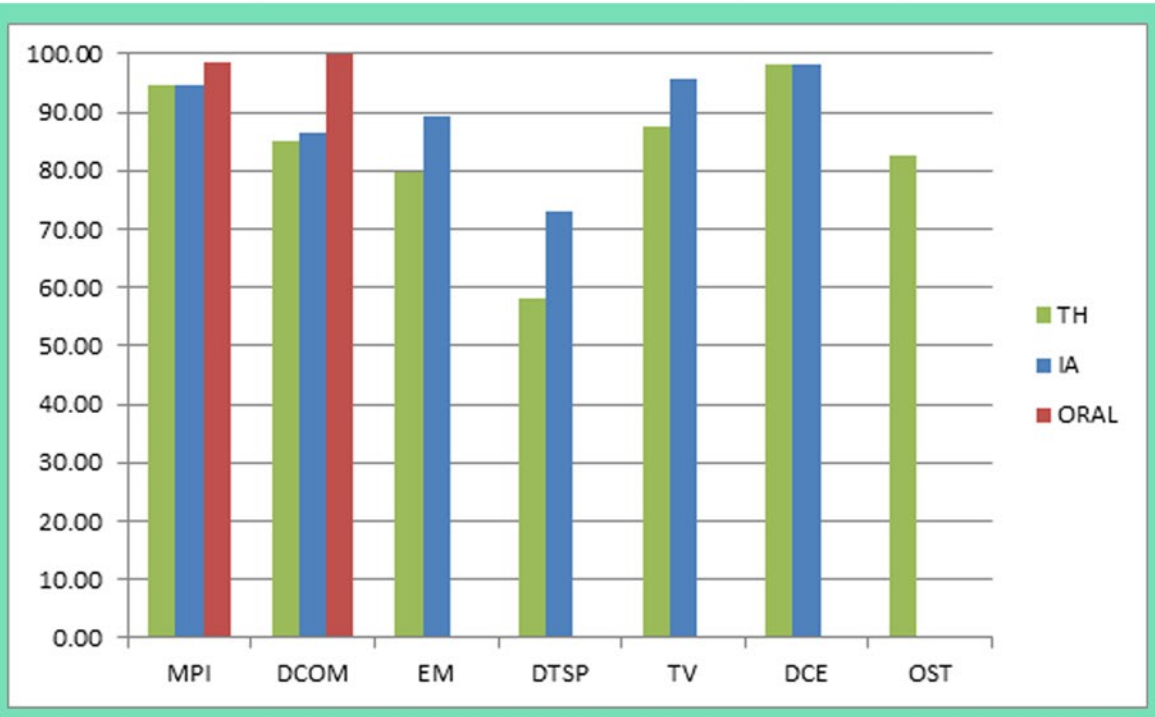
SEMESTER - VII

PASS %	MWE	MC	OC	NNFL	ICE	CBL	DMMM	PROJECT-I
TH	94.03	100	100	100	100	97.62	100	100
IA	100	100	100	100	100	100	100	
ORAL	100	100	100	100	100			100



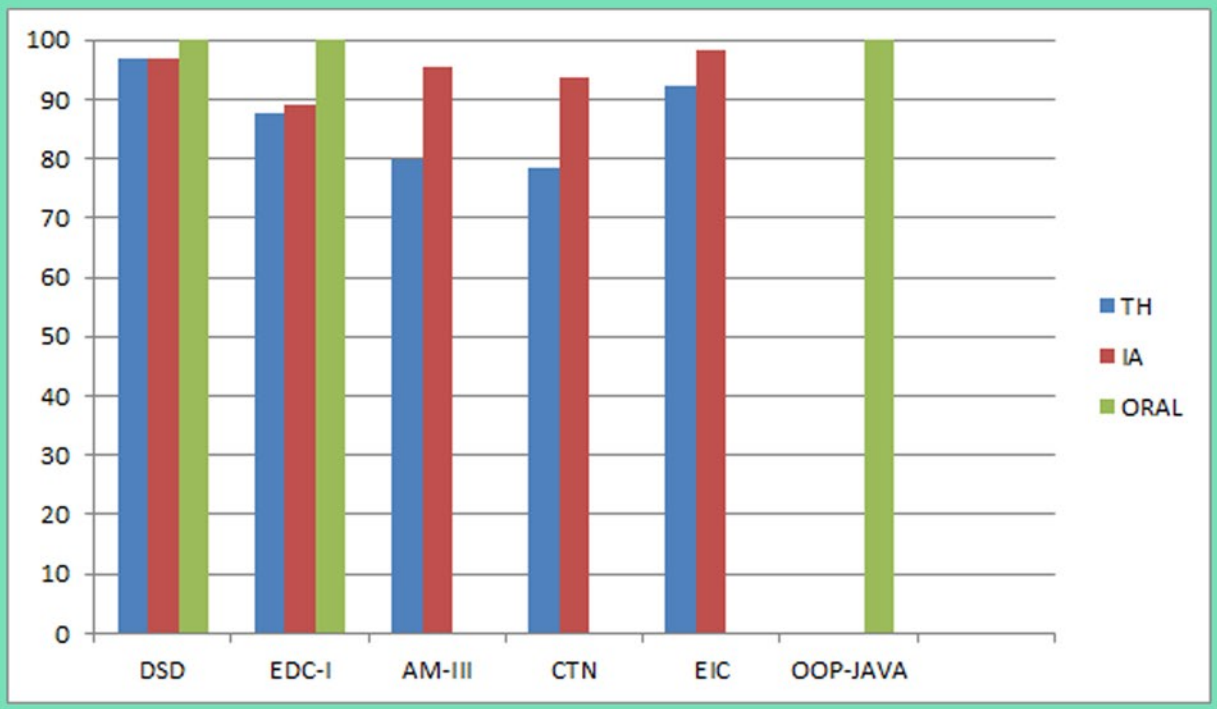
SEMESTER - V

PASS %	MPI	DCOM	EM	DTSP	TV	DCE	OST
TH	94.59	85.14	79.73	58.11	87.50	98.00	82.43
IA	94.59	86.49	89.19	72.97	95.83	98.00	
ORAL	98.65	100.00					



SEMESTER - III

PASS %	DSD	EDC-I	AM-III	CTN	EIC	OOP-JAVA
TH	96.92308	87.69	80	78.46	92.31	
IA	96.92308	89.23	95.38	93.85	98.46	
ORAL	100	100				100



MERITORIOUS STUDENTS

Final Year (BE):

YASH GALIYA
CGPA - 9.235

HIMANSHU RASAL
CGPA - 8.72

Third Year (TE):

DHRUVI SHAH
CGPA - 9.69

KIRAN YADAV
CGPA - 9.5

Second Year (SE):

SARAH SHAIKH
CGPA - 9.92

CONVOCATIO

BATCH

N CEREMONY

OF 2019

Music Information Retrieval & Music Signal Processing:
Indian Music perspective

INTRODUCTION

Music is an integral part of our lives and music performances are most complex representations of the genre. In view of the ever increasing sharing and distribution of music in digital ways, there is a need for the development of computational tools for organizing and picking up relevant information from these large collections. Music Information Retrieval (MIR) is a growing research field with many real world applications that involves people having the exposure to Musicology, Signal processing and Machine learning. The automatic extraction of musically relevant attributes from the audio signal is an important component of music data mining systems. As such, digital signal processing has become an indispensable analysis technique that address the address musical dimensions such as melody, harmony, rhythm, and timbre [Mueller MSP 2019]. However, majority of the research in MIR is limited to western or popular music cultures and don't generalize to other music cultures of world.

The CompMusic project [1] was conceived to bridge this gap and to provide solutions to the research challenges in non-western, culturally rich music traditions of world. CompMusic project identified the need of top-down approach of research involving musicology and higher level culture specific perspective rather than data-driven approach. Five music traditions focused here are, Hindustani (North India), Carnatic (South India), Turkish-makam (Turkey), Arab-Andalusian (Maghreb), and Beijing Opera (China). It aims to identify music problems coming from culture-specific contexts and to incorporate domain specific knowledge within the field of music information processing to provide solutions that might result in new computational methodologies of interest for a wide variety of music cultures.

INDIAN CLASSICAL MUSIC

Indian classical music performance is highly structured polyphonic music, with percussive and melodic accompaniments. It has two distinct styles – the Hindustani and Carnatic forms representing Northern and Southern states respectively, in a broader sense. The basic elements however remain the same. It encompasses melodious presentation of the Raaga mood adhering to the defined scientific rules of the Raaga, on the background of the precision calculations of the lengthy as well as fractional time intervals of the Taala.

In Indian Classical music performance, an artiste chooses a particular raga fitting the occasion and the audience and presents the raga within the framework of the bandish (or kruti) with the elaborate melodic improvisation adhering to the raga phraseology. Being both elaborative and expressive, it is fully developed form as for as melody and rhythm is concerned compared to any other music form.

Like western music, it uses 12 swaras or semitones, but uses just-intonation tuning where notes are written as fractions or ratios corresponding to the base note, unlike most other music forms that use equal-temperament tuning. This results in purer sounding notes compared to the rounded up or down notes of equal-tempered scale.

Concept of Melody

Melodic mode of Indian music is embedded in the raaga of an audio. Intonation of phrases and some swaras (semitones) in particular, along with the strength and duration of notes also form the attributes of raga in addition to aaroh and avaroh (scale), pakads (phrases) and chalans. Depending on the sequence of notes in the scale of the raga in Indian music, the artiste chooses a certain position for the note to ensure consonance with the previous or next note. The hypothesis is that, the ragas sharing the same scale would differ to certain extent in different intonations of certain swaras of the raga to achieve their uniqueness. Thus along with the probability of occurrence of a swara, position of the pitch of each swara is an important attribute in distinguishing the raga.

Pitch histogram is a statistical representation of the frequency of occurrence of each note in a musical piece. Features calculated from the histogram can be used in applications like raga recognition. In that sense, pitch histogram should be able to capture the unique melodic features of a particular raga. Melodic analysis of, vocal performances in raag Marwa and raag Puriya that share the same scale by pitch histogram is shown in Figure 1. In raag Marwa, most frequently occurring vadi swar is r and samvadi swar is D. Intonation of swara 'r' is a feature by which a performance in Marwa can be distinguished from that of Puriya. In Puriya, 'r' should be ati-komal and rendered without prominence by quickly shifting to S (or G).

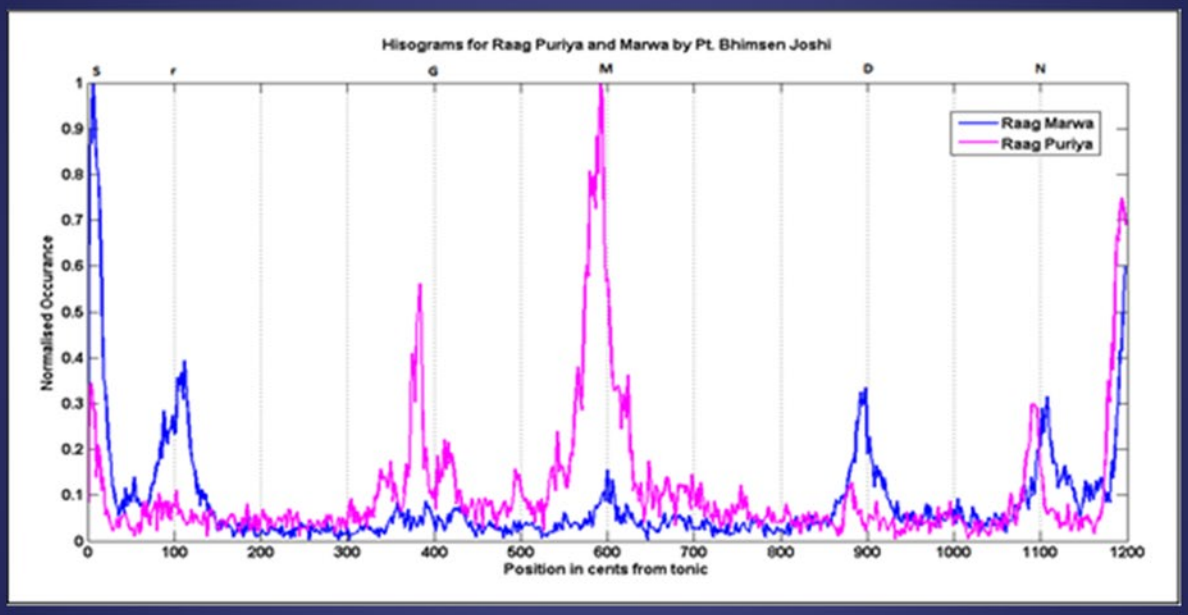


Figure 1: Pitch frequency histogram of compositions in Raag Marwa and Raag Puriya

Contrastingly in Marwa, the 'r' is presented quite boldly and frequently. These principles could clearly be demonstrated pitch histogram analysis of the frequencies of these notes. Figure 1 shows higher occurrence of r in the case of Marwa (than for Puriya) and and also the biased spread of r more towards S in Puriya.

Concept of Rhythm:

In a broader sense rhythm refers to all aspects of musical time patterns, such as, the way syllables of the lyrics are sung, or the way the strokes of the instrumental music are played or the inherent tempo of the melodic piece.The temporal structure of tal in Hindustani music can be described by the sub-beat structure 'vistar', primary pulse level 'matra', the section by 'vibhag' and complete rhythmic cycle, an 'avart' [2].

Indian classical music performances are accompanied by the percussion instrument tabla or mridangam. Tabla solo performance, exhibits the most complex and detailed percussion representation through sections like, peshkar, which is an introductory section, thematic development in kaidas, fast and flowing version in relas and pre-composed sections called gats. Among these, kaida is the most structurally sophisticated compositional form comprising an opening theme and a series of variations based on the opening theme. In these sections the tempo will be maintained same even though rhythmic density will increase after the opening of kaida.

Signal Processing in Rhythm analysis

Music is an event based phenomenon and beat location is represented by the onset of the percussive stroke. Rhythm of an audio is inherently captured in the beat locations and the patterns of beats exhibited in the periodicities of onsets. Percussion onset, the event that marks the beginning of the transient period can be characterized by the sudden burst of energy or the change in the short time spectrum of the signal. Sub-band spectral flux represents the change in magnitude in the frequency bins, restricted to the desired band. Detection function, SF (n) is,

$$SF(n) = \sum_{k=1}^{K} H\left[\left(|X(n,k)| - |X(n-1,k)|\right)W(k)\right] \quad (1.1)$$

where, X(n,k) is the short time DFT of the audio, H(x) is the half-wave rectifier function, to count only the onsets rather than offsets, and W[k] is the band limiting filter response with unity gain in the desired frequency region [3].

A robust approach to capture the salient periodicities and strengths of onsets derived from the audio representing the rhythmic pattern from cycle to cycle is the autocorrelation function (ACF). ACF, rn(k) of the spectral flux can be expressed as,

$$r_n(k) = \sum_{m=0}^{N-1-k} [sf(n+m)w'(m)][sf(n+m+k)w'(k+m)] \quad (1.2)$$

where, n is the block index, N is the block size and k is the lag w(m) represents the texture window. Here, autocorrelation of the spectral flux feature is computed in overlapping blocks of window length comparable to the cycle length, and 0.5s overlap. Only the information between zero and 3s lag is retained as rhythmic feature[4].

Percussion onset detection is an essential step in a number of musical analysis and musical information retrieval applications and the algorithm returned onsets and their periodicity pattern representing the rhythm of 5 frames in kaidas section of tabla solo is shown in Figure 2.
Only the information between zero and 3s lag is retained as rhythmic feature. Progression of rhythm with time can be represented by the rhythm model rhythmogram, a two dimensional time-pulse representation with lag-time on y- axis, time position on the x-axis and the autocorrelation values visualized as intensity as shown in Figure 3. This depicts the progression of rhythm in kaidas segment of a tabla solo performance by U. Zakir Hussain, upto 2s lag.

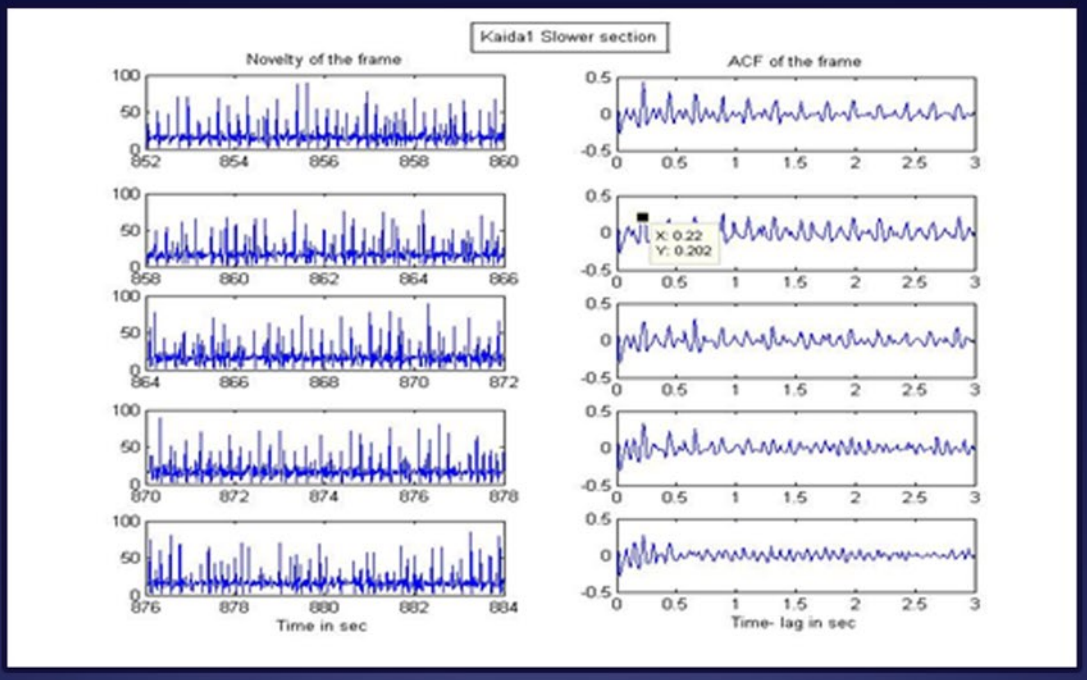


Figure 2: Onsets and the periodicity pattern in kaida of a tabla solo

Each of the kaidas, kaida1, kaida2 and kaida3 has its own theme and has a slow and fast section and this is reflected in the boundary within each kaida.

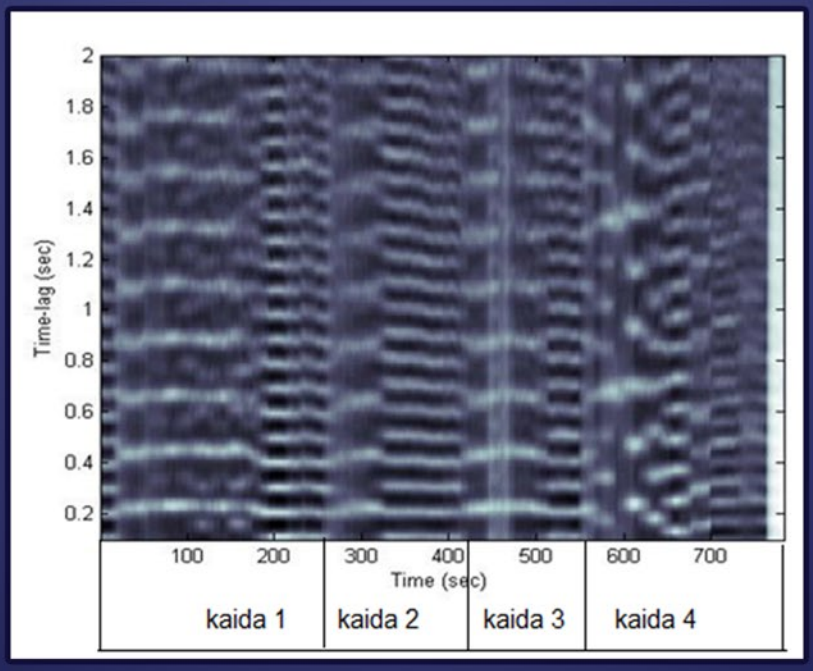


Figure 3: Rhythmic progression within kaidas of a tabla solo performance by a rhythmogram

FUTURE PROSPECTS:

Music Information Retrieval is an emerging research field with contributions from Musicology, Signal processing, Machine Learning, Deep Learning and extending up to IOT, with applications ranging from source separation, singing-voice processing, musical sound synthesis, structural analysis, audio summarization and user interfaces, to name a few.

REFERENCES

[1] Serra, X., 2011, October, “A multicultural approach in music information research,” in Proceedings of the 12th International Society for Music Information Retrieval Conference (Miami, USA). pp. 151–156.

[2] M. Clayton, Time in Indian Music : “Rhythm , Metre and Form in North Indian Rag Performance”, Oxford University Press, 2000.

[3] S. Dixon : “ Onset Detection Revisited”, In Proceedings of the International Conference on Digital Audio Effects (DAFx’06), Montreal, Canada. 2006.

[4] K. Jensen, J. Xu, and M. Zachariasen, “Rhythm-based segmentation of popular chinese music,” in Proc. Int. Conf. Music Inf. Retrieval (ISMIR), London, U.K., 2005.

T P Vinutha
I/C HOD & Asst. Professor,
SAKEC

Arduino Calculator

Choice of Material:

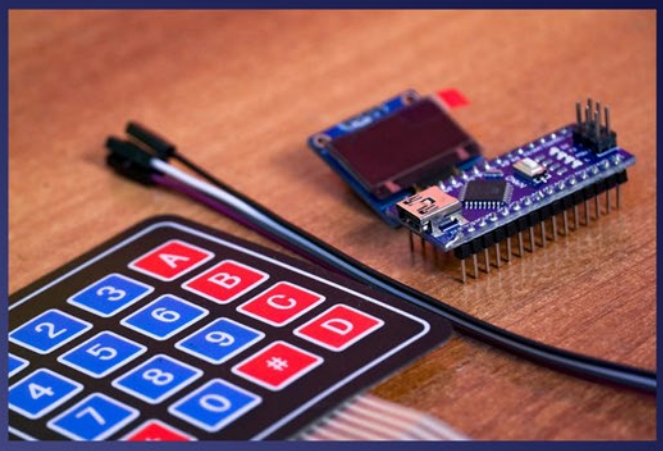
To make a calculator, we will need some kind of Processor, for which, we will use Arduino NANO.

For taking input number, we will use a 4x4 keypad with membrane switches, which has 4 rows and 4 columns. For display we can use either OLED or LCD display.

Summarizing the Cart: Arduino Nano/UNO, I2C OLED Display, 9x9 Keypad, Lithium Polymer Battery and switch.

The connections are very straightforward:

- Keypad to any digital pins on Arduino Nano.
- OLEDs SCL to Arduinos A5.
- OLEDs SDA to Arduinos A4.
- OLEDs VCC to Arduinos 5v.
- OLEDs GND to Arduinos GND.
- a Switch between Positive of Lithium Polymer Battery.
- Lipo to 5V and Gnd pins of Arduino.



Lets Code!

In this code, we will need the following Libraries.
SPI, Keypad, wire, Adafruit GFX, Adafruit SSD1306.

First we included Keypad library, next we will add SPI wire, Adafruit GFX and Adafruit SSD1306 libraries for OLED. Then we will initialize the OLED. Define rows and columns, define variables. Map out the Keypad in form of matrix, where in, our A key is replaced by “+” operator, B with “-” operator, c with multiplier, D with Divisor, hash with equals and finally star with clear.

In byte rowPins and colPins we define the pin out of keypad and initialize the Keypad, next we have a startup animation screen set up in this subcode. In the loop section, we will use cases for each operator and do the calculation keeping in mind the operators.

Once this code is uploaded to Arduino, we can see a startup animation screen saying Arduino Calculator by Mission Critical, followed by blank screen, which we will use to perform different operations. So we can now add, subtract, multiply and divide the numbers as we require. We can also use the answer obtained from the previous operation and perform operations on it!

AKSHAY MOMAYA
FINAL YEAR, EXTC,
SAKEC

Make Your Own Electric Skateboard

Many people often ask me how I've built an electric-skateboard which I ride on the streets. To be honest, I knew nothing about skateboarding. What's even worse is that, it's pretty hard to find skateboard culture in India and parts for the same. So here is my journey of building electric skateboard, so without any further ado **let's get started!**

First challenge was to find a skateboard which I can later modify to make it electric. I could have easily built one by myself but I Didn't have the right tools for that. Anyway when it comes to selecting skateboards there are quite a few choices like a penny board, speeding board, Longboard etc. Best choice here was the Longboard of course because they are usually wider and longer in shape. In addition to having softer wheels, they are also more reliable and easier to ride because of a more balanced structure, making them a perfect fit for the beginners and we will have a lot of room to add electronics on the board later.

So here starts the fun part, you want to make an electric skateboard Huh? Welcome to the world full of fun, patience, and options. Yes! options. There are tons of choices out there, whether it be motors, ESCs (Speed controller), or Batteries. But how do you narrow down? what you want or don't want? I'll help you to the best possible extent.
First off, let's understand all different parts you will need for building electric Skateboard.

Motor:

There are mainly two types of DC motors:
1) Brushed DC Motor
2) Brushless DC Motor (BLDC)

What you are looking for is a brushless (BLDC) outrunner motor with a kv rating from 170 to 300 and Power between 1500 to 3000 Watts. So, think of your kv rating as how much torque your board will have, the lower the kv the higher the torque. My motor is rated for 280kv and 2500watts that is pretty beefy and is more than enough for a person weighing 100kg.

ESC:

ESC is abbreviation for **Electronic Speed Controller**, since BLDC are a bit advanced and uses 3 phases to control speed, hence you need a speed controller. The ESC is the 'Brain' of the build. It's the link between your batteries and motor. It also connects to the receiver that goes to your remote control. The ESC gets the 'commands' (PWM Signal) from the receiver that tells it how much of the remote's throttle is pushed. Then it controls the amount of energy that passes from the battery to the motor, which controls the motor's speed.

The one I'm using is rated for 24Volts and 120Ampers, so if you do math
i.e.

Power= Voltage * Current, then 24*120 = 2880Watts and motor is rated for 2500Watts, so we have some head room here.

Note: ESC is the one part of your electric skateboard build that you do NOT want to cheap out on. Cheaper speed controller can catch fire. Also if you want you can use a VESC which is an advance version of ESC.

Battery(s):

The battery determines how far you can go. You want a battery that is compatible with your motor. My battery is 6S 3P Li-ion which means, I have 6 Li-ion cells in series with 3 parallel line.

That means the voltage of my battery is (6x4.2) 25.2Volts and each cell is capable of 25 Amper (In-Burst) and we have 3 in parallel so 25*3,which is 75 A.
Therefore,

Power = 25.2 Volt * 75 Amper = 1890 Watts.

Now you might wonder motor is rated for 2500Watts but our batteries can only supply 1890Watts, So how will it work? Well from my testing I found with a load of 80Kg the Motor was only drawing around 1200Watts. So we are good to go. Also each cell is 2600Mah and since we have 3 cells in parallel so total capacity is 2600*3 which is 7800mAh

Pulley and Belt:

So your wheels, motor pulley, wheel pulley, and belt all have to fit in together into what is referred to as a drive train. The ratio of the wheel pulley to motor pulley is called the “gear reduction ratio”. You want that to be around 2.5, but can go as low as 1.5 or as high as 3. Generally a lower reduction ratio is better but low speed. I used an 70mm wheel Pulley which comes in kit with a gear ratio of 3 for high speeds.

Motor Mount:

For my built I decided to make my own motor mount because one I ordered was very delicate.

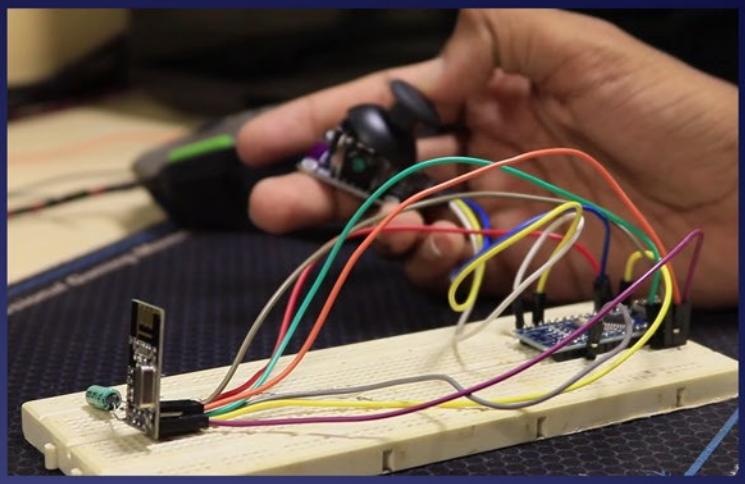
For designing I used Autodesk Fusion 360 and in the design I decided to go with the clamping technique for mounting it to the trucks of longboard. I created my final version, and with some testing and 3D printing, figured out how much slide I could get between the motor and the truck axle to tighten the belt in future.

Once design was ready I took it to nearby CNC workshop and got it manufactured using CNC. It is a subtractive manufacturing process which employs computerized controls and machine tools to remove layers of material from work piece and produces a custom-designed part. The material I used was Aluminium 6061-T6 because it is easy to work with and has High strength characteristics.

Now we know all the parts needed for the built so let’s start the Building Process!

The Built Process:

Firstly I started by removing rear right wheel so we can attach our mount and motor. Since the Trucks of skateboard had slight curve to it, I used a metal file to get rid of it such that motor mount fits perfectly on tucks of the skateboard. After installing the motor mount I installed the motor using Machine Screws.



Once that was done it was time to add pulley to our wheel so we can transfer the rotational energy from motor to wheel. It's really simple process just place the bigger pulley at exactly centre of wheel and mark the holes where we need to drill through wheel. After Drilling use some machine screws to attach the pulley to the wheel don't forget to use thread lock or use Self Locking Nut with machine screws.

Now attach the smaller pulley on motor shaft and put the belt along with Wheel and make sure it's properly aligned, such that all three combined form our drive train. After finishing that we can attach our ESC to the motor. Just connect three wire from ESC to the three wires of Motor now connect your battery pack to the ESC and finally it's time to connect ESC to Radio Receiver. I decided to build my own radio controller using Arduino and nRF24L01 Module but you can just buy one use it.

After attaching the receiver, test if motor is spinning in the right direction if not, just swap any two wires from motor and motor will spin in other direction. Now all you have to do is add all the electronics and Batteries into a case, I have a 3D printer so I made a custom case but you can use some plastic boxes and mount it underneath your longboard and you are ready to roll on streets!

Alright, Now for the numbers!

Weight: 7.2kg
Clearance: 7.5cm
Top Speed: 35km/hr (Possible to reach 48km/hr but highly unstable to ride)
Cruising speed: 25Km/hr
Range: 25 Kilometres
Power: 1890 Watts (Capable of 2500Watts)
Batteries: 6S 3P Li-ion (25.2V 7800mAh)

Nemeen Shah
Final Year, EXTC, SAKEC

Remember, Always skate within your ability and no matter what you ride, always wear a helmet and proper safety gear.

Pursuing Master's in Germany

In the 1931 bestseller, "Epic of America", James Truslow Adams described 'The American Dream' as "that dream of a land in which life should be better and richer and fuller for everyone, with opportunity for each according to ability or achievement." Even before being enrolled in a bachelor's program in engineering, I had already envisioned myself getting a master's degree from a prestigious university from the US. That was my version of 'the American dream'. And like me, there are thousands of aspiring engineers in India who share the same dream. Great universities, humongous campuses, big companies, fat pay checks, yes all of it. So, in the third year of my bachelor's I started preparing to fulfil my dream. By October 2018, I had appeared for GRE and TOEFL and did decently well on both the tests. By January 2019, all my applications were submitted. All I had to do then was wait. A letter of acceptance from any of the universities would be like hitting the jackpot. It would mark the beginning of my fairy tale. Time passed by and by April 2019, I received rejections from all the universities, like leaves falling off a withering tree. Not a single university accepted me. I was heartbroken, my dreams shattered even before they could begin.

"Well, I have a job. I'll work for a year and then try again in the coming year." I decided to focus on the semester 8 exams. On the first of May, I was browsing through the internet and I stumbled upon a course called 'Communications and Multimedia Engineering' being taught at some random university in Germany whose name I had never heard. The course looked very well structured and it perfectly aligned with my interests. Also, I despised the idea of working an IT job. The application deadline was long gone. Since the application involved only filling up a form and emailing my transcripts, I took a chance. On May 8, the semester exams commenced. On May 14, I received an email from the university saying that I'll be contacted for an interview soon. By May 24, my exams got over. On June 11, I had my interview. The same evening, I received a mail saying that I had been accepted by the university. Euphoria!! I was thrilled. By July 2019, I got started with the visa process for Germany and I flew here in September. It was a 180-degree flip. I had planned and prepared for the US but landed up in Germany.

It has been more than six months that I've been here in Germany now. And it's the best thing that could have happened to me. Today when I think of 'my' American dream, I am glad it didn't work out. And I have my reasons for it:

1. Education is free here

Yes, you read it right. Education in most* German universities is free of cost. Students don't pay a single cent as tuition fee here. The only cost that students have to bear is their living costs (rent, food, insurance, etc). As per the German government, a year's expenditure in living costs is €10,236 which roughly equals Rs.8,20,000. Considering that the degree program is two years long, it adds up to Rs. 16,40,000. As high as this amount may seem, it is still half of what one would spend in the US. *Most public universities don't charge a tuition fee. Some of them charge a minimal fee of €1000-€1500 per semester as per the governing state laws.

2. Do I need to learn German?

Don't be misled by the common myth that everything is taught in German here. There are more than 1500 programs, ranging from arts to engineering, taught completely in English. The German Academic Exchange Service or DAAD, as it is popularly known, provides details of all such courses.

3. Insurance is a boon

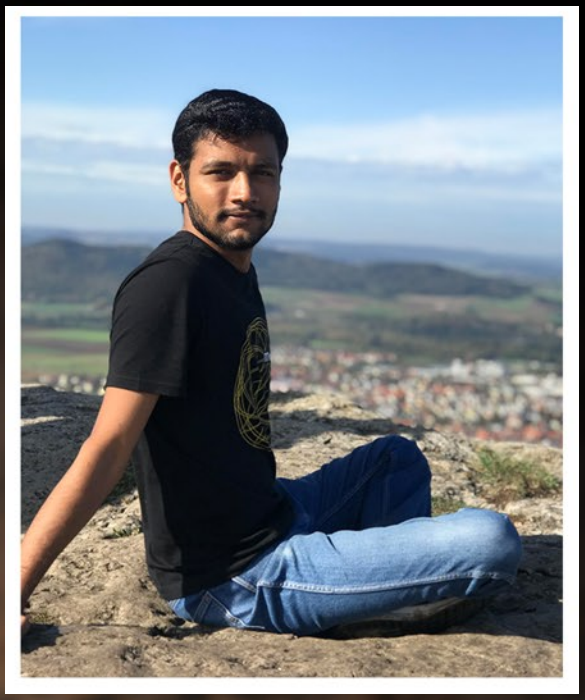
As a student going to the US, everyone prays that one doesn't fall ill there. The health care system is very expensive and it not so attractive to students. On the other hand, every student enrolled in a German university has to take a public (or private) health insurance for which they pay monthly. This covers all major illnesses. Even in the most dreadful situation like the Corona virus pandemic, the insurance companies covered everything.

4. The Schengen visa

Munich, Paris, Milan, Rome, Prague, Stockholm, the list is endless. Never in my life had I imagined that I could visit such places. The Schengen visa makes it come true. The visa allows free passage between 26 European countries without any restrictions. Flight tickets from Nuremberg (Germany) to Rome (Italy) cost as low as €15 at times. Also, all of Europe has discounts for students. It's a boon to travel as a student here.

5. Job opportunities

Germany plays a pivotal role in the EU and world economy. There are ample job opportunities here in varied fields. Be it a student internship, part-time job or full-time job, if you have the skillset, you have a job. Not to forget, the Schengen visa allows you to find a job in any of the Schengen countries. Germany is a wonderful place to study and spend time as a student. If you're planning to pursue a master's degree, I'd suggest you give some thought about doing it in Germany.



Vinit Veera
Alumni, EXTC, SAKEC

Currently pursuing M.Sc. in Communications and Multimedia Engineering
Friedrich-Alexander University Erlangen-Nuremberg
Email: vinitveera4@gmail.com

Confined, not broken

Our world is now at war
With an enemy that's unseen
But we can beat the invader
If we keep our hands squeaky clean!
This is not the end, it's just a break
To reset yourself, a new life to make

The city that never sleeps, the local you always try to sneak were both halted at an unannounced station called "Nationwide lockdown". The entire country was under attack and this time, it wasn't machine guns or AK 47 it was a virus smaller than an ant. What was supposed to be a few weeks of staycation and isolation turned out to be months of lockdown and emotional breakdown. From questioning reality to looking for a conspiracy theory is a quick step when you spend the whole day sitting alone with your thoughts. After the initial 21 days I started limiting my news reading to a few selected sources and to speak about it only with a few informed people. I am self-isolating myself from opinions and avoiding chit chat over the virus: that is necessary for mental stability. My recipe of a sane mind is one hour of trusted newspaper reading in the morning, a news update around 6 pm, sometimes a strong cup of chai and talks with friends over video calls. Oh, and I almost forgot, it is important to silence the many WhatsApp forwards. Once I have made my home safe (from germs and misinformation) I think about all the time I have on my hands and the very few ideas in my head.

After a few weeks of being happy about having no college to attend, no work to be done and binge watching all the series Netflix could offer I am bored. After having so much free time and peace I wish I could say- I am finally getting up early, eating a healthy breakfast and exercising everyday (but I am not).

In This lockdown Most importantly, the excuse “I don’t have time” has expired. I have time to read all those books I bought and never opened, watch all the movies on my list, write all the books I have been playing in my head, set the kitchen on fire with my cooking, Spend time with my mother who always complained about me never having enough time for her.

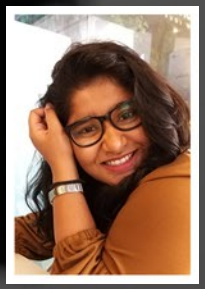
If I don’t do it now, it feels like I never will.

Every morning I woke up with the fear of being late to college, now I wake up with the fear of putting on weight. While us, the privileged lot are crying and cribbing about not being able to party, or meet our friends, or eat good restaurant meals. There are people of the unprivileged spectrum are struggling for a day's meal, a night's sleep! Every night when we go to bed with our head well rested on a soft pillow and in the security of our mother's love let us never take anything for granted and pray for them. Let us be grateful for all the front-line soldiers, grateful for every moment spent under the blue sky without a care of the world.

This lockdown may bring out the best in most of us but may bring out the worst in very few. Social media and motivation gurus may constantly ask you to be productive. But honestly, it's okay if you don't come out of this as an artist, it's okay if you did not learn a new skill. In this crucial time, all that matters is that you grow at your pace, stay home and be safe! It's okay to be unproductive!!!

Some days can be harder than others and it is just fine to take care of ourselves in different ways. It is not an easy time, uncertainty may keep you up longer than usual at night, but it is useful to meet the true you, to understand you are lonely but not alone. And to be sure that when everything is over, we will take care of the things that matter with greater consciousness. The entire world is clinging on hope and let us do our bit and stay home. This lockdown might be the story we tell your future generations, whenever we want to lecture them about our difficulties!

We may be caged birds for now but what we should remind ourselves is that even caged birds sing!



Vismaya Venu
Final Year, EXTC,
SAKEC

RAWA CAKE

Ingredients:

1 cup rawa (semolina)
1 cup maida (all-purpose flour)
1 cup desiccated coconut
1 cup sugar
1 cup curd
1 cup milk
1 cup oil
1 cup crushed almond
1 Tbps baking soda
1 tps salt.
2 Tbps vanilla essence
2 Tbps baking powder
(Note: 1 cup= 100g)

Procedure:

In a bowl add rawa, maida, desiccated coconut, sugar, curd and oil and mix well. As per thickness of the batter add milk and stir simultaneously.

Add some crushed almond and Save the rest for later. Add vanilla essence and mix. Add baking powder, baking soda, salt and mix in a cut-and-fold manner (do not over mix). Preheat the microwave oven for 180 Degree for 10-15 minutes.

Grease the baking tray with oil/butter. Pour the batter in the baking tray. Add the crushed almonds on top. Keep the baking tray in the pre-heated oven and let it cook for 35-40 minutes. Serve when it cools down.

Pranjal Bhat
Final Year, EXTC, SAKEC

Rain

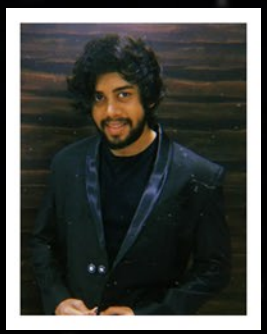
Drip, drop
The rain kept pouring down.
Drip, drop.
Tiny beads of water.

Millions of unspoken thoughts
Forgotten memories.
Pages of unwritten stories.
Fabricated universes.

Drip, drop.
The rhythm of the rain doesn't stop.
Drip, drop.
The beads continue falling.

Ages of forgotten eras
Discarded artifact.
Thousands of irrelevant years
Unwanted cards.
The rain keeps pouring down.

~Kunal



KUNAL SANGHAVI
FINAL YEAR, EXTC,
SAKEC

तो दिसला

भिजलेल्या डोळ्यातून आज शब्द मनात उतरले,

त्याला पाहताच क्षणी डोळ्यातून अक्षू बरसले,

त्याचीच आस धरुन आयुष्यात मी बिखरले,

नसताना तो जवळ जगणेही मी विसरले,

त्याचीच वाट पाहत पापण्या माझ्या पाणवल्या,

सावळ्या डोळ्यातून या आभाळा सारख्या बरसल्या,

खूप काही म्हणायचं होत शब्द माझे आतुरलेले,

मुखातून न उमलता डोळ्यातून उमळलेले,

म्हटलं जरा जवळ जाऊन त्याचांशी थोड बोलावे,

त्याच्या आठवणीसंगे जगते त्यालाही थोड कळावे,

त्याच्या आठवणीची ओंजळ तशीच भरून ठेवलेली,

एकही क्षण न सांडवता जीवापाड मी जपलेली,

कठं आज दाटून आले त्याला समोर पाहून,

बरच काही बोलयचं होत मनात शब्द गेले राहून,

इतक्यात त्याने पाहिले मला डोळ्यातून अक्षू ढाळत,

अनेक प्रश्नांची उत्तरे मिळाली मलाही न कळत,

नव्हता तो आज माझा झाला दुसर्या कोणाचा,

रेशमगाठी तुटल्या आमच्या सदैव राहिल्या वेड्या मनांचा.

~Tejal

Tejal Raul
Final Year, EXTC,
SAKEC

A-dil-e-nadan

HAR HUSN KA KARIGAR

Na lafz tumhare hote hai, Na sher tum likhte ho,
Tum hissa hote ho sirf uss daur ka
Jab ye lafzon ka mansuba sajta hai,
Tum hote ho kisi jariye ki tarah,
Jiska asli karigar pehle tumhe bana chukka hota hai.

YAAR

A shariq Itni kamjor nahi dosti meri
Iss janam na sahi jab laut au tab milna hi hai.
"Ek hi toh jaan h" kehkar roka na kar,
Ek hi hai tabhi toh sab jaan lena hai,
Waqt kam nahi hai janab magar
Aehsas hajar jeene hai,
Sirf aehsas ki baat nahi magar
Lautkar tujhe milne bhi toh ana hai.

MAAF KARNA DOST

A shariq tu mujhme itna na ulajh ja,
Mai bas itar hu hawa k sath behta,
Jise mila use hu mehekate chala.
Pal do pal ka hi hai apna ye silsila,
Tu gale lagate chal aur shariqon se,
Iss itar ka gandh paseene se mil jayega,
Tujhe mehekate aya h; thoda tere pass rahega;
thoda unse mil jayega,
Teri mehek bankar hi magar jana jayega,
Behta chala hu hawa k sang dur hai wo parimal ka bajaar,
Maaf kar na dost mera bekhudi ka hai karobar,
In chahaton k botalon mai kaid nahi reh paunga,
Jis din tu dil se yad kare magar tere saas bankar laut aunga.

Instagram: @avant_garde_lemniscate

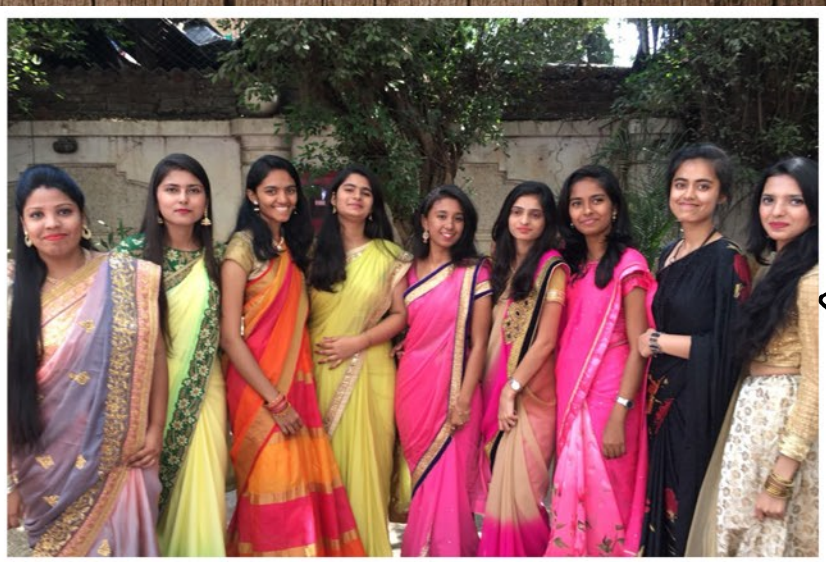
ARPITA KOTKAR
FIRST YEAR, EXTC,
SAKEC

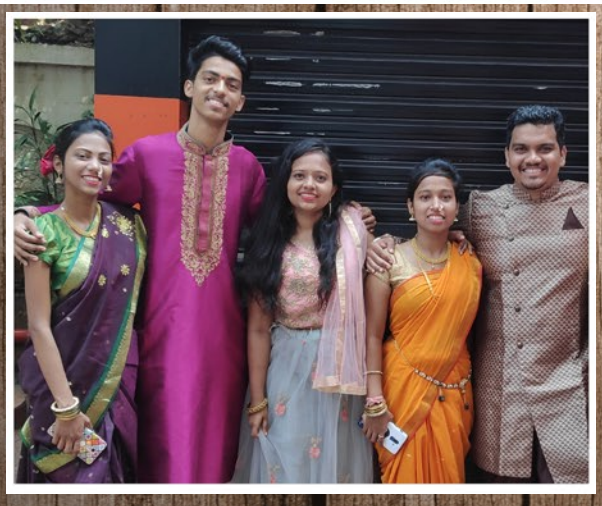
Art Corner

Anisha Dhakate
Final Year, EXTC,
SAKEC

A Trip Down Memory Lane

Sometimes we can't let go of memories, because they are constant reminders of a great story that we never expected to end.





We didn't realize we were making memories. We just knew we were having fun...

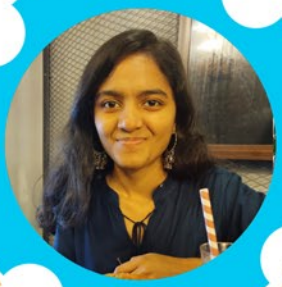
Batch of 2020

Editorial Team

Sujitha Kurup

Rahul Mehta

Nemeen Shah



Anisha Dhakate

Vismaya Venu

SHAH AND ANCHOR KUTCHHI ENGINEERING COLLEGE
DEPARTMENT OF ELECTRONICS AND TELECOMMUNICTION ENGINEERING