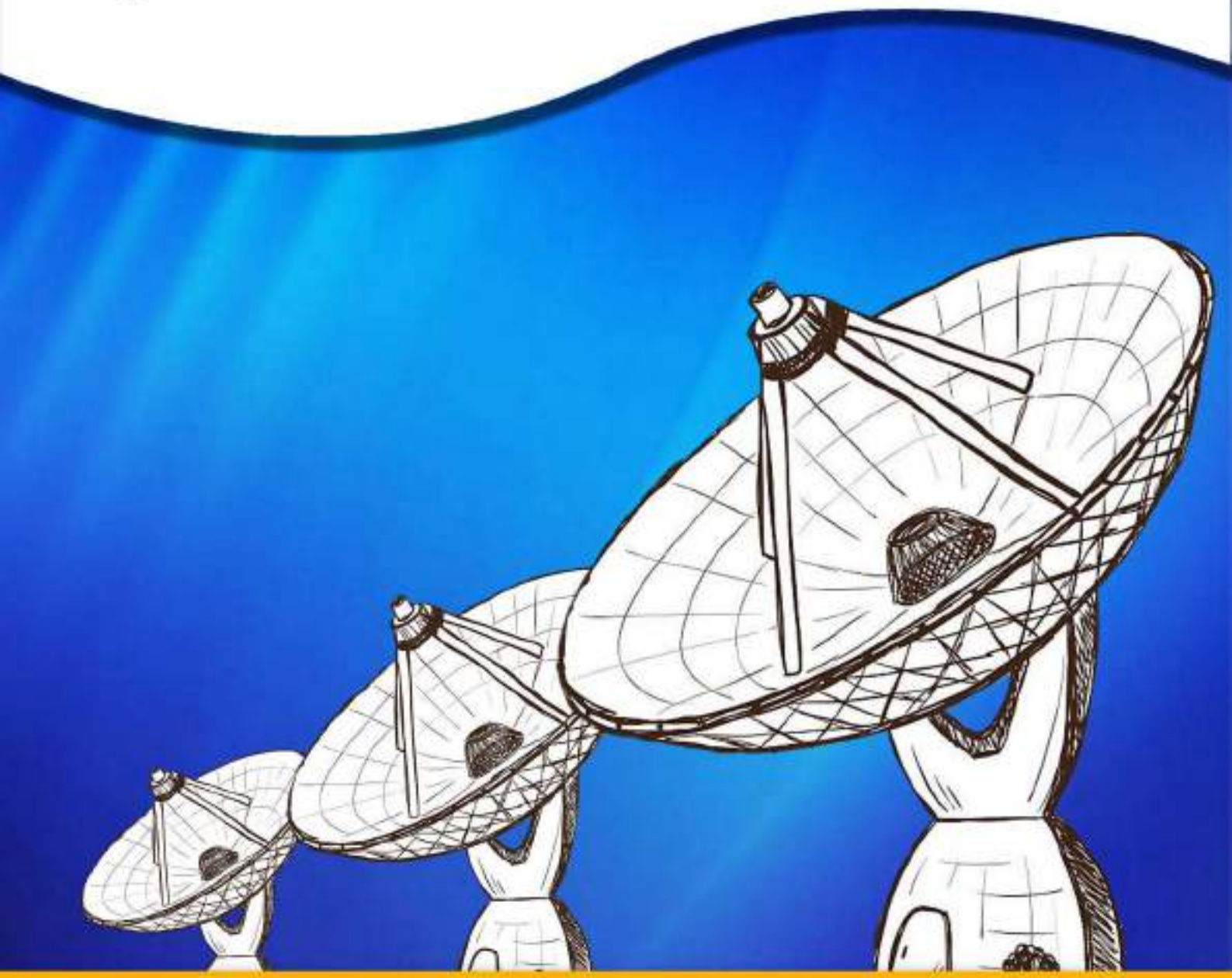
SHAH & ANCHOR SM

Mahavir Education Trust's

SHAH & ANCHOR

KUTCHHI ENGINEERING COLLEGE

W.T. Patil Marg, Next to Duke's Co., Chembur, Mumbai - 400 088



COMMUNIQUE

SEPTEMBER, 2021

Department of Electronics & Telecommunication Engineering

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 2021

EXTC DEPT.

Ms. T.P. Vinutha

- I/C Head of Department, Department of Electronics & Telecommunication Enginering, SAKEC

From the HoD's Desk

"My only genius talent is Inquisitiveness"

- By, Albert Einstein

Inquisitiveness is intellectual curiosity. It is the tendency to want to know things, even if they are not immediately or obviously useful. In the difficult times of pandemic around, it was indeed a challenge for the faculties to keep the spirit of learning alive in students. Department has taken great efforts in this direction to motivate, involve and to enhance the capability of students. This could be achieved by the innovative teaching methodologies adopted, the positive interactions and the events hosted by the department!

With the shift in the focus of curriculum towards self-learning, involvement of students in projects and enhancing the knowledge through online courses is observed. This makes them more competent for the industry and higher studies.

I congratulate the department for adapting to the changed situations and standing together to face the challenges!!

Contents

Meet the faculty

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

Ms. Mamta Tikaria
Assistant Professor
(Soft-computing techniques in Microwave Engineering, UWB Communication)

Mr. Rohan Borgalli
Assistant Professor
(Signal Processing, Digital System Design, & Quantum Computing)

Ms. Gauri Chavan
Assistant Professor
(Real Time Operating Systems, Embedded Systems, & Microprocessor System)

Ms. Uma Raj
Assistant Professor
(MIMO and OFDM Communications, Communication Systems)

Mr. Shridhar Sahu
Assistant Professor
(Analog and Mixed signal VLSI design, Digital VLSI design, Microelectronics)

Mr. Jagdish Sarode
Assistant Professor
(Embedded Systems and Microprocessor systems)

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

Mr. Ashish B. Tank
Assistant Professor
(Computer Networking, & Security)

Mr. Rahul Khandare
Assistant Professor
(Antenna design, IoT, Networking, Embeded Systems)

Ms. Seema Kawale
Assistant Professor
(Mobile Communication, Image Processing, Neural Networks)

Mr. Bhushan Pawar
Assistant Professor
(Wireless communication, Antenna and Wave propogation)

Ms. Gauri Deshpande
Assistant Professor
(Digital Signal Processing, Speech and Image Processing)

Non-Teaching Staff

Ms. Shraddha Avachat
Lab Assistant
(B.Sc. Electronics)

Mr. Tukaram Chavan
Lab Assistant
(Diploma in Audio & Radio Servicing)

Departmental EVENTS

Alumni Talk
"My Journey from India to Germany"

Department of Electronics and Telecommunication engineering in association with Alumni Cell & IETE SAKEC organized, 'My journey from India to Germany' on 30th Dec. 2020. Speaker of the event was Mr. Vinit Veera, alumni of EXTC dept. batch 2018-19, who went on to pursue his masters degree in Communications and Multimedia Engineering from Friedrich Alexander University Erlangen-Nuremberg, Germany. He is specializing in audio signal processing. He shared his experiences about applying to German Universities, studying & living in Germany, finding & applying for internships there, along with working part time in Germany. There was an active participation by students as well as by alumnus in this event.

Vinit Veera,
Alumni (Extc dept.)

Webinar Series On
"Communication System Using Matlab Simulink"

The department of Electronics and Telecommunication Engineering, SAKEC in collaboration with Mathworks & IETE- SAKEC organized 3-days webinar veries on "Communication System using MATLAB & Simulink" on 18, 22 & 23 Feb. 2021 virtually on MS Teams. The webinar was open to all students, faculties and professionals. Overall, around 50 participants actively attended this webinar series.

Following topics are covered in webinar series:

Day 1- Basics of Communication System

Day 2- 5G Toolbox for Communication System

Day 3- Design, Model, and Analyze Networks of RF Component

MATLAB

IETE SAKEC

Speakers

Mr. Suraj Gawande,
Application Engineer,
Mathworks, Pune.

Mr. Milind Khanderao,
Application Engineer,
Mathworks, Pune.

Online Project
Poster Presentation

As our tradition, department of Electronics and Telecommunication Engineering in collaboration with IETE-SAKEC conducted "Online Project Poster Presentation Competition" under Oscillation 2021, a technical initiative started under IETE on 08th May, 2021. All the final year SAKEC EXTC students participated in this event and around 19 project groups presented their project work through poster presentations.

The event was inaugurated by Ms. T.P. Vinutha, HoD EXTC & ISF Coordinator with her motivating words. The event was judged by expert panel. Around 80 people witnessed this event which included all participating students and faculties.

IETE SAKEC
Nurturing Opportunities, Connecting Communities

The following groups are the winners of the Online Project Poster Presentation Competition:

1st Prize:

Hiteshkumar Jain, Vedant Madane, Tarang Agle, and Vinodkumar Muleva
Project Title:- "SENTIMENT ANALYSIS OF THE MAHĀBHĀRATA CORPUS"

2nd Prize:

Nikhil Jadhav, Abhishek Sonavane, Anmol Mayekar, and Ronak More
Project Title:- "IOT BASED WOMEN'S SAFETY DEVICE"

3rd Prize:

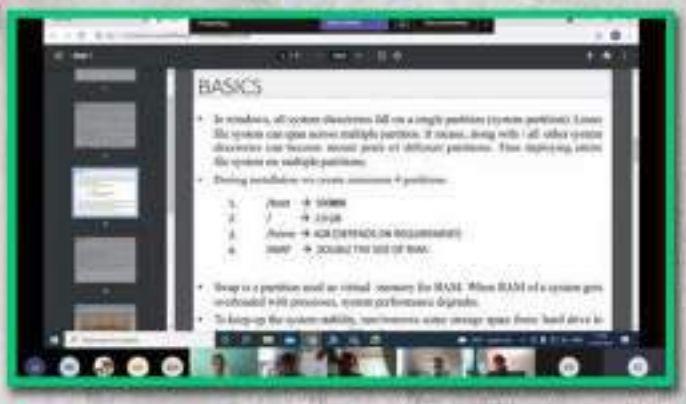
Sarah Shaikh, Roopali Shetty, Juzer Sisawala, and Vinayak Kukrety
Project Title:- "GESTURE TO TEXT/SPEECH TRANSLATION"

15 - Days Online Training on
"Red Hat Enterprise Linux (RHEL - 7)"

IETE SAKEC in collaboration with Electronics and Telecommunication Engineering department was organized a 15-Day online training on RED HAT ENTERPRISE LINUX (RHEL-7) for EXTC department students from 15th June to 30th June, 2021 (2 Hrs Per Day). Speaker for the event prof. Ashish B. Tank, asst. prof. EXTC department, SAKEC, The online training was inaugurated by Ms. T.P. Vinutha, HoD EXTC & ISF Coordinator with her motivating words.

Following topics are discussed with Hands-on Lab session:

- **Introduction and Installation of RedHat Linux**
- **File Management and Permissions**
- **User Management**
- **Process and Service Management**
- **BOOT Process**
- **Software Management**
- **Network Service Management**
- **Disk Management**
- **Network Storage**
- **Remote Services**



The training was attended by 20 Students from EXTC department.

Speaker

Mr. Ashish B. Tank,
Asst. Professor,
EXTC, SAKEC

ISRO - IIRS Certificate Courses

Electronics and Telecommunication department in association with IETE SAKEC organized various ISRO - IIRS online certificate courses. Prof. Bhushan Pawar was the coordinator for these courses.

Sr. No.	Course	Course Duration	No. of participants
1	69th IIRS online certificate course on "Remote Sensing & Geographical Information System Applications"	02nd November, 2020 to 20th November, 2020 (3 weeks)	Total 15 staff and students have participated in this workshop.
2	68th IIRS online certificate course on "Geographical Information System"	28th September, 2020 to 23rd October, 2020 (3 weeks)	Total 11 staff and students have participated in this workshop.
3	67th IIRS online certificate course on "Understanding of Coastal Ocean Process using Remote Sensing and Numerical Modelling"	21st September, 2020 to 25th September 2020 (4 days)	Total 08 staff and students have participated in this workshop.
4	66th IIRS online certificate course on "Global Navigation Satellite Systems"	14th September, 2020 to 25th September, 2020 (1 week)	Total 46 staff and students have participated in this workshop.
5	64th IIRS online certificate course on "Basics of Remote Sensing Geographical Information System and Global Navigation Satellite System"	17th August, 2020 to 20th November, 2020 (13 weeks)	Total 16 staff and students have participated in this workshop.

6	65th IIRS online Certificate course on "Remote Sensing and Digital Image Analysis"	17th August, 2020 to 11th September, 2020 (3 weeks)	Total 12 staff and students have participated in this workshop.
7	7001 IIRS online certificate course on "Remote Sensing and GIS Technology and Applications for university teachers and government officials"	13th June, 2020 to 01st July 2020 (3 weeks)	Total 07 staff members have participated in this workshop.
8	62nd Geospatial Inputs for Enabling Master Plan formulation	27th July, 2020 to 31st July, 2020 (4 days)	Total 06 staff and students participated in this workshop.
9	63rd RS Applications in Agricultural Water Management	03rd August, 2020 to 07th August, 2020 (4 days)	Total 08 staff and students have participated in this workshop.
10	69th IIRS outreach programme RS and GIS Applications	02nd November, 2020 and 20th November, 2020 (3 weeks)	Total 15 staff and students have participated in this workshop.
11	70th IIRS outreach programme Remote Sensing of Land Degradation	01st December, 2020 and 07th December, 2020 (1 week)	Total 03 staff and students have participated in this workshop.
12	72th IIRS outreach programme Basics of Geocomputation and Geoweb Services	19th October, 2020 to 29th October, 2020 (10 days)	Total 04 staff and students have participated in this workshop.
13	71st IIRS outreach programme Advances in SAR-Polarimetry and Interferometry	14th December, 2020 to 18th December, 2020	Total 05 staff and students have participated in this workshop.
14	1011th One day workshop on "Space Technology & its applications"	11th January, 2021	Total 03 staff and students have participated in this workshop.
15	1012th One day workshop on "Satellite altimetry for River Monitoring"	17th March, 2021	Total 03 staff and students have participated in this workshop.

15	1012th One day workshop on "Satellite altimetry for River Monitoring"	17th March, 2021	Total 03 staff and students have participated in this workshop.
16	73rd Overview of geoprocessing using Python	18th January, 2021 to 29th January, 2021	Total 05 staff and students have participated in this workshop.
17	74th Satellite based navigation, a journey from GPS to Mobile Phone platform	1st March 2021, to 12th March 2021	Total 01 student have participated in this workshop.
18	75th Online course on "Geoinformatics for Disaster Management"	5th April, 2021 to 16th April, 2021	Total 45 staff and student have participated in this workshop.
19	76th Online course on "GIS for supply chain Management"	26th April, 2021 to 30th April, 2021	Total 53 staff and students have participated in this workshop.
20	80th Online course on "Earth Observation for Carbon Cycle Studies"	21st June, 2021, to 25th June, 2021	Total 05 staff and students have participated in this workshop.

Departmental Accolades

FACULTIES

Ms. T. P Vinutha
I/C HoD, EXTC
Assistant Professor,
SAKEC

1

Our HoD Prof. T.P.Vinutha has following publications in this academic year:-

1. International Journal- P. Rao, T. P. Vinutha and M. A. Rohit "Structural Segmentation of Alap in Dhrupad Vocal Concerts", Transactions of International Society for Music Information Retrieval (TISMIR), 3(1), pp. 137--152, Sep 2020.

2. International Confernce - Rohit M. A., Vinutha T. P., and Preeti Rao "Structural Segmentation of Dhrupad Vocal Bandish Audio Based on Tempo", Proceedings of ISMIR, October 2020, Montreal, Canada.

3. National Conference: Gauri Deshpande, Vinutha T. P. "Percussion transcription by Supervised Learning", Proceedings of 52nd Mid Term Symposium, MTS-2021, 30th April, 2021.

Certificate

is awarded to

T. P. Vinutha

for presenting the paper entitled

Percussion Transcription by Supervised Learning

in the 52nd Mid Term Symposium (MTS) on the theme *'Emerging Trends in ICT and Electronics'*

organized by IETE on April 30, 2021 in the virtual mode.

Mr. Parag Walimjkar
Convener, MTS organizing committee

Dr. J W Bakal
President, IETE

Ms. Mamta Tikaria
Assistant Professor,
SAKEC

2

Prof. Mamta Tikaria has attended various faculty development programs on the topics such as 'Biomedical Waste Management during & after COVID-19', 'Communications System using MATLAB & Simulink', organized by various eminent institutes including SAKEC.

3

Mr. Rohan Borgalli
Assistant Professor,
SAKEC

1. Prof. Rohan Borgalli scored a splendid score of 100% in the Spoken Tutorial Examination on Arduino conducted by SAKEC in the odd semester of A.Y. 2020-21.

2. He has successfully completed courses offered by Coursera such as 'Create your first chatbot with Rasa & Python', 'Emotion AI: Facial Key - points Detection'.

3. Along with this he has also attended various faculty development programs on the topics like 'Research Areas in Technologies for Societal and Rural Development', 'Cyber Security', etc. organized by various eminent organizations including SAKEC.

4

Ms. Gauri Chavan
Assistant Professor,
SAKEC

1. Prof. Gauri Chavan attended summer training workshop on "Python Programming" in the odd semester of A.Y.2020-21.

2. Along with this she has also attended various faculty development programs like 'Developing Secure IOT Applications', 'Assessment and Accreditition Process of NAAC', organized by various eminent organizations.

5

Ms. Uma Raj
Assistant Professor,
SAKEC

Prof. Uma Raj has attended various online faculty development workshops on topics such as 'Energy Efficient Techniques for 5G Wireless Communications', 'AI/ML In 5G Communication Technology', 'LTE & 5G Protocol Stack Testing' etc.

6

Mr. Shridhar R. Sahu
Assistant Professor,
SAKEC

1. Prof. Shridhar Sahu scored 72.5% in the Spoken Tutorial Examination on Arduino conducted by SAKEC in the odd semester of A.Y. 2020-21.

2. He has also successfully completed the online specialization from Coursera on the topic of 'Semiconductor Devices'.

3. He has also enhanced his knowledge through various other STTP programs such as 'VLSI Design Using Cadence Tools: Digital CMOS Design and Verification' and FDPs such as 'Demystifying 5G RF ASCIs', etc., conducted in the academic year 2020-21.

Mr. Jagdish Sarode
Assistant Professor,
SAKEC

7

1. Prof. Jagdish Sarode has completed NPTEL Online Certification course on 'Introduction to Industry 4.0 and Industrial Internet of Things' with the significant score of 62% in Feb, 2021.

2. He has also completed an online courses conducted by IIRS (Indian Institute of Remote Sensing) viz, 'Understanding of Coastal oceans processes using Remote Sensing & Numerical Modelling' in September, 2020.

Elite

NPTEL Online Certification

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

This certificate is awarded to

JAGDISH PRALHAD SARODE

for successfully completing the course

Introduction to Industry 4.0 and Industrial Internet of Things

with a consolidated score of 62 %

Online Assignments	21.03/25	Proctored Exam	41.33/75

Total number of candidates certified in this course: 3610

Prof. G P Raja Sekhar
Dean, Continuing Education
IIT Kharagpur

Sep-Dec 2020
(12 week course)

Prof. Debjani Chakraborty
Coordinator, NPTEL
IIT Kharagpur

Indian Institute of Technology Kharagpur

swayam

Roll No: NPTEL20CS69S61980413

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

8

Ms. Kalpana Chaudhari
Assistant Professor,
SAKEC

1. Dr. Kalpana Chaudhari, DT member of ocean KAN and RISK KAN from Future earth, executive member of ISDR have organized and moderated the session titled "North - South Participation through Engaging Communities for implementation of Sustainable Development Goals Harnessing Science, Research and Innovation" on 14th June, 2021 through online SRI-2021 platform. The event was hosted by The Sustainability Research & Innovation Congress 2021 (SRI-Congress 2021), Future Earth, Brisbane, Australia from June 12-15, 2021. She gave presentation on the topic "Applications of Digital Technology for Continuing Education for Sustainability during Covid-19 Pandemic". She has enlightened about education during covid-19 pandemic, its impacts, challenges and initiatives taken by government of India in case of digital education. She has obtained scholarship (140 USD towards registration fees) for participation and presentation.

2. Dr. Kalpana Chaudhari was the panelist speaker for world summit on information society 2020 (WSIS Forum 2020) on 17th July, 2020.The session titled "Global Programs and Conventions: Coherence and Mutual Synergies from Holistic Information Management" was relayed from Geneva, Switzerland. During the session she spoke on the topic "Mainstreaming Digital Skills through Information and Communication for Sustainable Development During COVID-19 Emergency. The World Summit on the Information Society forum was co-organized by ITU, UNESCO, UNDP and UNCTAD.

3. She also scored 70% in the Spoken Tutorial Examination on C++ conducted by SAKEC in the odd semester of A.Y. 2020-21.

4. She has also enhanced her knowledge through various certification courses in AI, Java, Blockchain etc through Coursera.

5. She has also completed online a course conducted by IIRS (Indian Institute of Remote Sensing) viz, 'Understanding of Coastal oceans processes using Remote Sensing & Numerical Modelling' in September, 2020.

6. Along with this she has also attended various faculty development programs such as 'Demystifying 5G RF ASCIs', 'Applications of MATLAB in Mathematics, Science and Engineering' etc. conducted in the academic year 2020-21.

9

Ms. Seema Kawale
Assistant Professor,
SAKEC

Prof. Seema Kawale scored an amazing score of 87.5% in the Spoken Tutorial Examination on Arduino conducted by SAKEC in the even semester of A.Y. 2020-21.

10

Mr. Bhushan Pawar
Assistant Professor,
SAKEC

1. Prof. Bhushan Pawar has completed a certification course from Coursera on the topic of 'Google Cloud Platform Fundamentals: Core Infrastructure' in May, 2020.

2. He also completed a certification course from Udemy in July, 2020 on the topic of 'Python for Data Science and Machine Learning Bootcamp'.

11

Ms. Gauri Deshpande
Assistant Professor,
SAKEC

Prof. Gauri Deshpande presented a paper along with our HoD Ms. T.P. Vinutha on "Percussion Transcription by Supervised Learning" in the 52nd Mid Term Symposium (MTS) on the theme 'Emerging Trends in ICT & Electronics' organized by IETE on April 30, 2021 in the virtual mode.

Certificate

Gauri Deshpande

Percussion Transcription by Supervised Learning

organized by IETE on April 30, 2021 in the virtual mode.

Mr. Vinay Mukhija
Convenor, MTS organizing committee

Dr. J M Bakal
President, IETE

12

Mr. Rahul Khandare
Assistant Professor,
SAKEC

Prof. Rahul Khandare scored a great score of 85% in the Spoken Tutorial Examination on Arduino conducted by SAKEC in the odd semester of A.Y. 2020-21.

STUDENTS

Saurav Jha
(Alumni) BE-7 EXTC, SAKEC

1

Mr. Saurav Jha our class BE student from Batch-2020-21 has successfully completed a Microsoft certified course on Azure Fundamentals.

Microsoft

Vedant Madane
(Alumni) BE-7 EXTC, SAKEC

2

Mr. Vedant Madane, our class BE student from Batch-2020-21 has successfully completed various online courses in Python programming, Machine Learning such as 'Sentiment Analysis in Python', 'Python Data Science Toolbox', 'Reinforced Machine Learning in Python', 'Natural Language Processing', etc. through various online platforms.

Aarushi Nandoskar
SE-7 EXTC,
SAKEC

2

Ms. Arushi Nandoskar, our class SE student has successfully completed NPTEL Online Certification course on Digital Circuits with a stunning score of 66%.

Elite

NPTEL Online Certification

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

This certificate is awarded to

AARUSHI SAMEER NANDOSKAR

for successfully completing the course

Digital Circuits

with a consolidated score of 66 %

Online Assignments	25.00/25	Proctored Exam	40.5/75

Total number of candidates certified in this course: 1369

Prof. G P Raja Sekhar

Sep-Dec 2020
(12 week course)

Prof. Debjani Chakraborty

Indian Institute of Technology Kharagpur

swayam

Roll No: NPTEL20EE70S61980182

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

NPTEL

FREE ONLINE EDUCATION
swayam

Jayesh Suryawanshi
SE-7 EXTC,
SAKEC

3

Jayesh Suryawanshi, has successfully completed the online course on "Control Systems" organized by Indian Institute of Technology Madras (IIT-M), under NPTEL Swayam with a splendid score of 65%.

Elite

NPTEL Online Certification

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

This certificate is awarded to

JAYESH PRAMOD SURYAWANSHI

for successfully completing the course

Control Systems

with a consolidated score of 65 %

Online Assignments	18.78/25	Proctored Exam	46.5/75

Total number of candidates certified in this course: 606

Devendra Jalihal

Prof. Devendra Jalihal
Chairman
Centre for Continuing Education, IITM

Sep-Dec 2020
(12 week course)

Prof. Andrew Thangaraj
NPTEL Coordinator
IIT Madras

Indian Institute of Technology Madras

swayam

Roll No: NPTEL20EE90S71980163

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

NPTEL

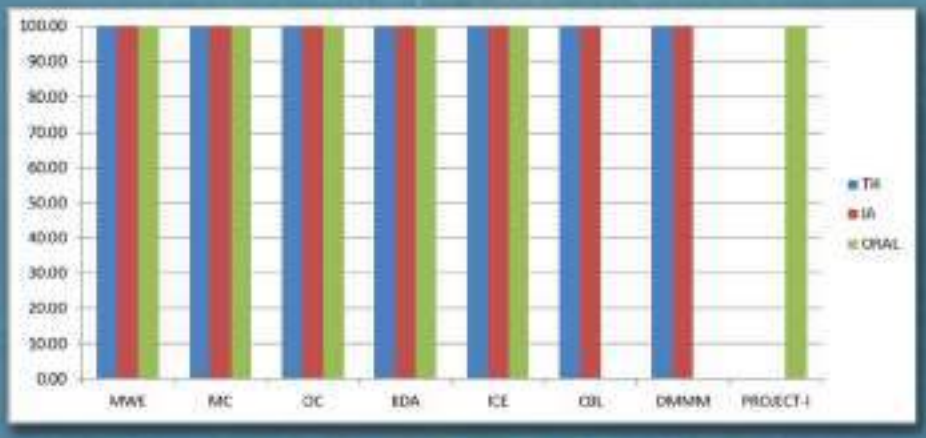
swayam

RESULT ANALYSIS
2020-21

ODD SEMESTERS

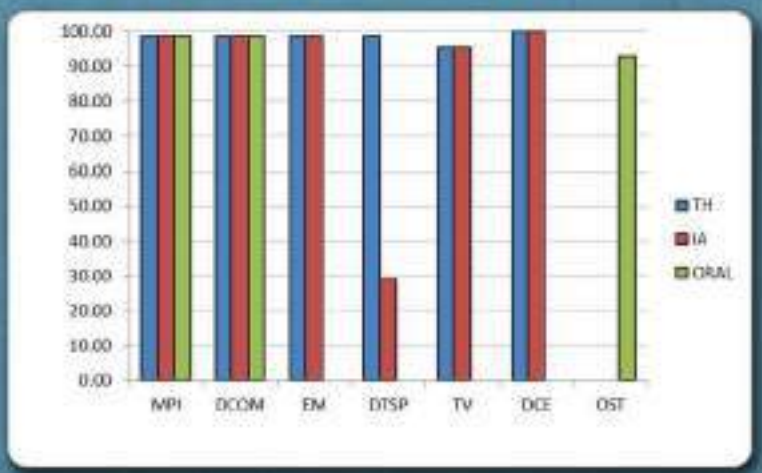
SEMESTER - VII

PASS %	MWE	MC	OC	BDA	ICE	CBL	DMMM	PROJECT-I
TH	100.00	100.00	100.00	100.00	100.00	100.00	100.00	
IA	100.00	100.00	100.00	100.00	100.00	100.00	100.00	
ORAL	100.00	100.00	100.00	100.00	100.00			100.00



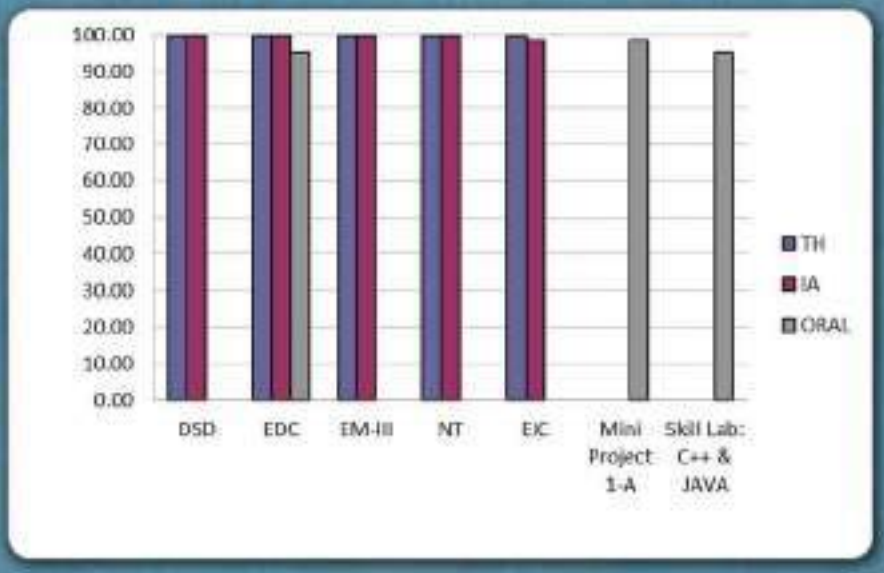
SEMESTER - V

PASS %	MPI	DCOM	EM	DTSP	TV	DCE	OST
TH	98.55	98.55	98.55	98.55	95.45	100.00	0.00
IA	98.55	98.55	98.55	29.00	95.45	100.00	0.00
ORAL	98.55	98.55	0.00	0.00	0.00	0.00	92.75



SEMESTER - III

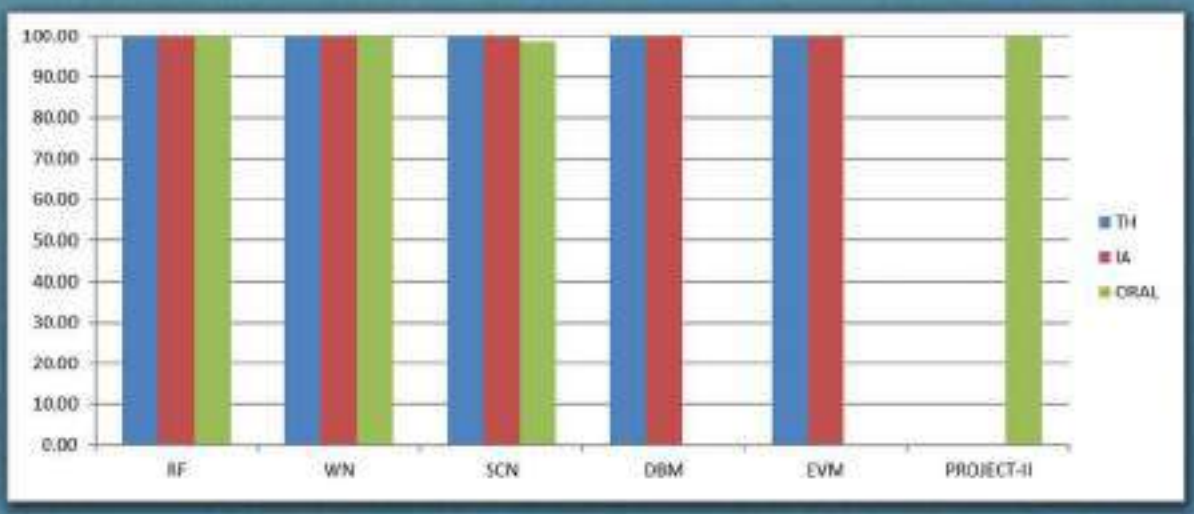
PASS %	DSD	EDC	EM-III	NT	EIC	Mini Project 1-A	Skill Lab: C++ & JAVA
TH	100.00	100.00	100.00	100.00	100.00		
IA	100.00	100.00	100.00	100.00	98.39		
ORAL		95.16				98.39	95.16



EVEN SEMESTERS

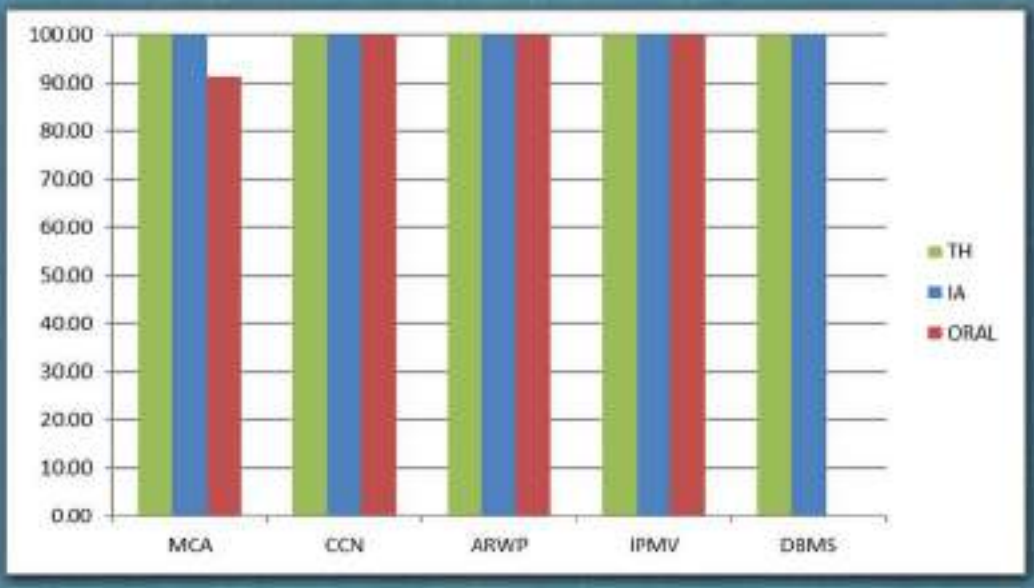
SEMESTER - VIII

PASS %	RF	WN	SCN	DBM	EVM	PROJECT-II
TH	100.00	100.00	100.00	100.00	100.00	
IA	100.00	100.00	100.00	100.00	100.00	
ORAL	100.00	100.00	98.67			100.00



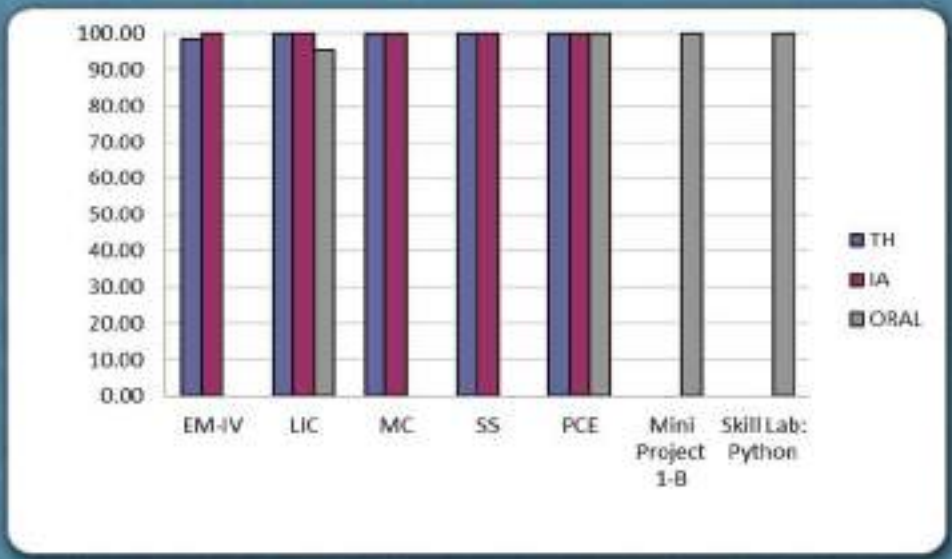
SEMESTER - VI

PASS %	MCA	CCN	ARWP	IPMV	DBMS
TH	100.00	100.00	100.00	100.00	100.00
IA	100.00	100.00	100.00	100.00	100.00
ORAL	91.30	100.00	100.00	100.00	



SEMESTER - IV

PASS %	EM-IV	LIC	MC	SS	PCE	Mini Project 1-B	Skill Lab: Python
TH	98.39	100.00	100.00	100.00	100.00		
IA	100.00	100.00	100.00	100.00	100.00		
ORAL		95.16			100.00	100.00	100.00



TOPPERS LIST

ODD SEMESTERS

SEMESTER - III

Rank	Name	GPA
1	SURYAWANSHI JAYESH P	10
2	GAIKWAD SAYLI A	9.75
3	JAISWAL SANDHYA R	9.75

SEMESTER - V

Rank	Name	GPA
1	NAIK MOHIT CHANDRAKANTH	10
1	RAUT SHUBHAM RAMAKANT	10
2	VADHAN NIR KHETSHI	9.85
2	VORA AAGAM SANDIP	9.85
3	PITHADIA AKSHIT RAJEEV	9.74

SEMESTER - VII

Rank	Name	GPA
1	SHAIKH SARAH S	10
2	SHETTY ROOPALI S	10
3	PANDYA SHIVAM N	9.96

EVEN SEMESTERS

SEMESTER - IV

Rank	Name	GPA
1	KHAN SHADAB M	9.79
2	GAIKWAD SAYLI A	9.75
3	JAISWAL SANDHYA R	9.75

SEMESTER - VI

Rank	Name	GPA
1	MEHTA KHUSHANK DILKHUSH	10
1	NAIK MOHIT CHANDRAKANTH	10
1	RAUT SHUBHAM RAMAKANT	10
1	MARU DHANANJAY DINESH	10
1	NAIK SARVESH SAIRAM	10
2	POWALE PARTH HITESH	9.96
2	SHARMA SIDDHANT V	9.96
2	VORA AAGAM SANDIP	9.96
3	SANJANA SURESH	9.92
3	CHAUBE ANUSHKA VINOD	9.92

SEMESTER - VIII

Rank	Name	GPA
1	GORE ANANYA A	10
2	SHAIKH SARAH S	10
3	SHETTY ROOPALI S	10
3	SHINDE ANUP R	10

SPOKEN TUTORIAL TOPPERS (2020 -21)

Spoken Tutorial was open for all year EXTC department students. Prof. Rohan Borgalli was the coordinator. The students who outperformed are as follows:

BE7 (PYTHON)		
1	SHAH SAHIL P	90%
2	VEDANT MADANE	85%
3	HARISH CHOUDHARY	80%

TE7 (JAVA)		
1	SIDDHANT SHARMA	82.50%
1	SHUBHAM RAUT	72.50%
2	SHREYAS PENDBHAJE	67.50%

FE7 (C LANGUAGE)		
1	VIJAY SANDHA	90%
2	ESHA TELKAR	75%
3	NIMIT MORE	72.50%

SE7 (ARDUINO)		
1	DRASHTI SHAH	95.00%
1	SAIM PATEL	95.00%
2	NARENDRA PARIHAR	92.50%
2	AMEYA MARATHE	92.50%

The following courses were open for all:

RDBMS			
1	SARAH SHAIKH	85%	BE7
2	TAHER DORIWALA	72.50%	BE7
3	MRUGANK TANNA	67.50%	BE7

C++			
1	JAYESH SURYAWANSHI	85%	SE7
2	SHIVAM PANDYA	77.50%	BE7
2	VIJAY SANDHA	77.50%	FE7
3	SAHIL SHAH	72.50%	BE7
3	NIMIT MORE	72.50%	FE7

Android app using Kotlin			
1	VEDANT MADANE	73%	BE7
2	SHUBHAM RAUT	65.00%	TE7
3	Adit Gandhi	57.50%	SE7

LINUX			
1	VIJAY SANDHA	76.70%	FE7
2	NIR VADHAN	70.00%	TE7
2	VEDANT MADANE	70%	BE7
3	AKHIL CHHEDA	65.60%	BE7

PHP and MySQL			
1	MOHIT NAIK	68%	TE7
2	DIKSHA PAWAR	68%	TE7
3	VEDANT MADANE	61.10%	BE7

Alumni Achievements

Akshay Momaya,
Alumni (EXTC Dept.)

1

UV-C Sterilization machine "Enigma"

To bear a torch of "Make in India" - mission launched by our honorable PM, our alumini Mr. Akshay Momaya bacame an Entrepreneur by starting his own company named "Momaya Enterprises", under which he manufactured three variations of a UV-C Sterilization machine "Enigma" during COVID-19 pandemic in the year of 2020. He has delivered hundreads of these machines till now and still receiving the orders from all across the country.

Drone For Rescue & Surveillance

As a final year project, Akshay Momaya along with his team members, Nemeen Shah & Anisha Dhakate made a drone for rescue and surveillance.

Social Media Contribution

He also designed and made an electric bike by converting an old Bajaj Boxer Petrol motorcycle into all electric motorcycle. As he likes to share his knowledge, he also has a YouTube channel called "Mission Critical" and a regular blog on "Instructables". His achievements are very inspiring for his juniors.

2

Rohit Gupta,
Alumni (EXTC Dept.)

Mr. Rohit Gupta, BE Electronics and Telecommunication Engineering (2019-20) participated in National Innovation Contest 2020 organised by MoE's Innovation Cell under the guidance of Prof. Shridhar Sahu. They qualified for next stage of financial assessment by competing with 1500+ teams on national level. The project submitted by them was "Eye Controlled Wheelchair Using Raspberry Pi".

PERCUSSION TRANSCRIPTION BY SUPERVISED LEARNING

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Abstract— Labeling of tabla strokes is a timbre recognition problem that identifies the rhythmic structure underlying the melody of the music piece. Segmenting the stroke from the audio and labeling it is crucial for automatic transcription of tabla performances that can serve as a pedagogic tool for music learner. In this work onset detection that relies on the broadband nature of the drum stroke and the percussion transcription of the strokes in tabla audio in North Indian classical music are implemented. Classification of strokes using straight forward method of decision logic based on stroke acoustics and also by decision tree is presented.

Keywords- MIR, transcription, percussivity, decision tree, onset, tabla

I. INTRODUCTION

Melody and rhythm form the basic elements of music representation. Rhythmic pattern of any composition in Indian classical music is described by the Taal system. Understanding the rhythmic structure underlying the melody is essential in various MIR applications. The automated transcription of percussive events could be utilised to simplify therythm transcription. It can allow a music learner to play the music piece in the absence of notation, like Indian classical music that is mainly passed on through oral tradition.

Although research in the Music transcription field is predominately shaped by the transcription of melody, it should be noted that the rhythm established by the percussive instruments is an essential concept of musical structure. Tabla is a percussive instrument widely used in North Indian classical and semi classical music. Labeling of Tabla strokes provides a low level description of the rhythmic structure of a musical piece. Most of the music indexing and retrieval are focused on western music while few works are dealing with recognizing the percussion strokes of North Indian classical music.

The proposed approach is based on segmenting the audio by finding the onsets, wherein each segment consists of a tabla stroke and identifying the strokes based on the presence of a bass stroke and the strong partial corresponding to the stroke.

Finally, labeling the strokes of audio according to the syllable or bol associated with each stroke & validating the result

manually annotated audio clips.

Comparative evaluation of automatic classification of drum sounds has been presented in Herrera and Yeterian . In their work, preliminary set of 50 descriptors have been considered and then refined to get a reduced set of 25 relevant features. Different classification techniques like, instance-based, statistical-based and tree-based have been used and tested by tenfold cross validation. As labeling tabla strokes is a timbre recognition problem, relevant descriptors would be the features describing the spectral shape. But, including all the spectral descriptors would definitely introduce redundancy and hence there is a need for proper selection of features. P.Chordia has used Principle Component Analysis (PCA) that uses an orthogonal transformation to convert a set of observations of possibly correlated variables into a set of values of linearly uncorrelated variables called principal components to reduce the initial features. Herrera and Yeterian have used algorithm-independent methods like, Correlation-based Feature Selection(CFS), that evaluates the subsets of features instead of evaluating individual features, ReliefF, that evaluates the relevance of an attribute by repeatedly sampling an instance and considering the value of the given attribute for the nearest instance of the same and for the nearest different class. They have reported best results for CFS while using with decision tree approach to classification of features.

II. TABLA ACOUSTICS

The Tabla is a percussion instrument used in North Indian music consisting of a pair of drums, Dayan (Right hand wooden treble drum) and Bayan (metallic bass drum).

Each of the tabla stroke is associated with a mnemonic syllable or bol. Ta(or Na), Tin, Tun, Ti, Te are dayan bols and Ge, ke are bayan bols. A stroke from the dayan can be combined with a stroke from the bayan by playing them simultaneously to form a compound stroke like Dha or Dhin.

A. Tabla bols of Teental

Teental is the most common tal of North Indian music which is played on Tabla. It has a symmetrical structure of four vibhags (measures) of four matras each. The characteristic pattern of bols (theka) of Teental is as shown below:

Dha dhin dhin dha | dha dhin dhin dha |

x 2
dha tin tin ta | ta dhin dhin dha |
O 3

Tabla bols of Teental can be categorized as 'Dha', 'Dhin', 'Ta' and 'Tin'. Ta and Tin are in the khali section of Teental, where only the right drum, dayan is played. Dha=Ta+Ge and Dhin=Tin+Ge, where Ge is the bayan (left drum) bol.

B. Acoustic features of strokes of Teental

Narrowband spectrogram with window length of 40msec is shown in Fig 1. Manually marked bols of the strokes are shown below the spectrogram.

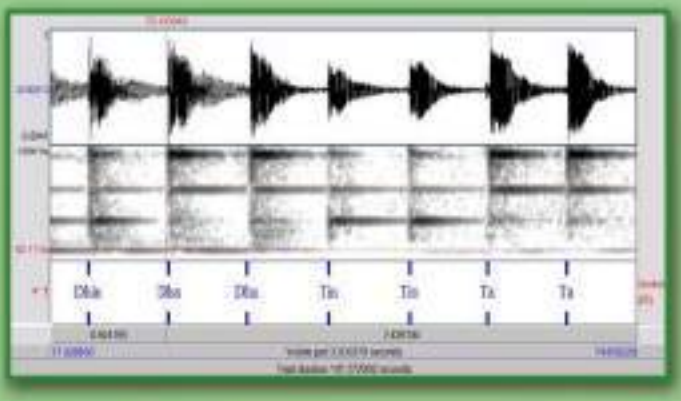

Figure 1: Narrowband spectrogram of strokes of Teental

Region up to 1000Hz is zoomed in as the strokes can be discriminated in this region of the spectrogram. Dha and Ta strokes are similar except the additional low frequency Ge component. Likewise, Dhin stroke also contains an additional partial corresponding to the Ge component, compared to the Tin stroke.

For playing the dayan strokes Ta and Tin, the third finger damps the fundamental by resting on the head. For Ta, the index finger strikes the rim, while for Tin the index finger strikes the head of the drum. Khali strokes Ta and Tin are slowly decaying strokes. The difference in these strokes is due to the location of strongest partial among the harmonics. Ta has a strong partial near 1KHz, but Tin has a strong partial below 500Hz

For playing the bayan stroke Ge, the index finger strikes the head at far the edge of patch. Hence, Ge is an open stroke on a low pitched bayan drum. Due to this, the compound strokes Dha and Dhin decay slowly compared to Ta and Tin.

III. DATABASE DESCRIPTION

Two solo tabla recordings of good audio quality downloaded from tablaradio.com, are in Teental with 16 beats. They have pressure variations on the left drum. Third recording is a tabla-lesson in Teental by artiste Venkat. These recordings are down sampled to 16Khz, and converted to mono channel.

Strokes that are labelled by careful hearing and based on the spectrogram observation serve as a ground truth and also for training the model in case of a decision tree approach. Acoustic features and the number of strokes used in the database are given in Table 1.

Table 1: Database description

Stroke	Strongest partial (in Hz)			# of strokes
	Tabla lesson	TL31	TL27	
Ta	909.8	818	731	18
Tin	351.3	547	491	18
Dha	909.8	818	731	54
Dhin	351.3	547	491	54
Total strokes	32	48	64	144

IV. EXPERIMENTATION AND DISCUSSION

A. Segmentation

Picking up strokes from the audio is an essential step towards successful transcription. For tabla audio, segmentation needs to find the onset points. Here, a fast and efficient way to decompose a spectrogram using a simple technique which involves percussive feature detection is implemented.

The onset of a note is a single event that marks the beginning of the transient period, wherein the excitation is applied and quickly damped, leaving only the slow decay of the signal at the resonant frequency of the body.

Onset Detection

Each frame of a short-time Fourier transform (STFT) of the signal is analysed and a percussive measure is assigned to it, to get the percussive temporal profile. The magnitude STFT of the signal is taken, and the log difference of each frequency bin between consecutive frames is then calculated. This measure effectively indicates how rapidly the spectrogram is fluctuating. If the log difference exceeds a user specified threshold, it indicates a percussive onset and a counter is incremented. The final value of this counter, corresponding to each frequency bin is taken to be the measure of percussivity of the current frame.

Once all frames have been processed, a temporal profile which describes the percussion characteristics of the signal will be available.

Let's assume that, X(k,m) is the absolute value of the complex STFT, where m is the time frame index, k is the frequency bin index. Log difference of the spectrogram with respect to time can be expressed as,

$$X'(k,m) = 20\log 10 * \frac{X(k,m-1)}{X(k,m)}$$

for all m and for $1 \le k \le K$. To detect the percussive presence, percussive measure can be defined as,

$$Pe(m) = \sum_{k=1}^{K} K\, P(k,m) \qquad \text{-----(2)}$$

where,

$P(k,m) = 1$; if $X'(k,m) > T$ and

$P(k,m) = 0$;otherwise ----- (3)

Here, T is a threshold that signifies the rise in energy measured in dB which must be detected within a frequency bin to consider it as a percussive onset. P(k,m) is assigned '1' if the threshold condition is met otherwise zero. So, Pe(m) represents a count of number of bins that are positive going and exceed the threshold. We can note that the actual energy present in the signal is insignificant here; and only the measure of how percussive or broadband the event is needed. Hence, compared to the standard energy-based onset detection system, the detection function implemented here can deal with low energy onsets as long as they are broadband in nature.

Onset detection algorithm is tested on the tabla lessons recording by Venkat that is sampled at 16 KHz and converted to mono channel.

Results of onset detection algorithm is shown in Fig 2. Percussive count is characterizing the tabla onsets fairly well.

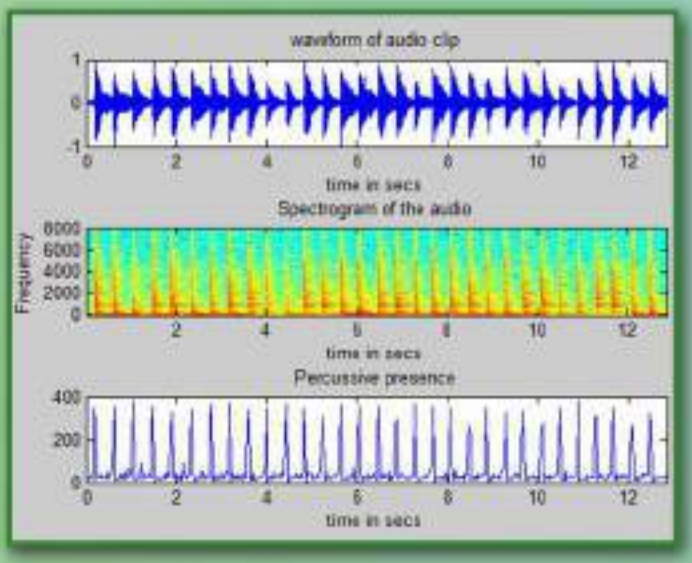

Figure 2: Waveform, spectrogram and the percussive count of a tabla recording

B. Features for classification

Acoustics of tabla strokes (Fig 1) indicate distinguishable strong partials for each bol. Also, the bass component, Ge in Dha and Dhin strokes distinguish them from the khali strokes Ta and Tin. These indicate a straight forward and simplistic approach of defining energy in a well-chosen set of bands as features representing the strokes of tabla.

Power spectra of various isolated strokes of Teental are computed to decide about the boundaries of the energy bands.

Manually marked stroke onsets are taken as reference for the segmentation of the audio into strokes.

As a first step, FFT of the frame X(k) of 40 msec size, after the attack period (after two frames) is computed. Power spectrum Pxx (k) is calculated as,

$$Pxx(k) = X(k) * \mathrm{conj}(X(k)) \qquad \text{------ (4)}$$

Normalized power spectra can be calculated as,

$$Pxx\ nor(k) = (Pxx\ (k))/(Pxx\ max) \quad \text{------ (5)}$$

where, Pxx max is the maximum of the power spectrum of the frame Normalized power spectra of different strokes of tabla, for the recording 'TablaLoop31' is shown in Fig3.

The spectrum of each stroke has been divided into 4 bands of frequency. The boundaries were decided after several trails to get significant results. Band boundaries have been decided as,
B1 = |100; 150| Hz; B2 = |300; 400| Hz;
B3 =|500; 600| Hz; B4 = |700; 850|.

The energy within in the bands has been calculated as,

$$Eband = \sum_{k=k0}^{k1} Pxx\ (k) \quad \text{------ (6)}$$

where, Pxx(k) represents the power spectrum of a particular bin. Band energy is normalized as,

$$Eband\ nor = (Eband)/(Eoverall) \quad \text{------ (7)}$$

where, E_overall is the overall energy calculated as,

$$Eoverall = \sum_{k=1}^{N} P\ xx\ (k) \quad \text{------ (8)}$$

[Eb1, Eb2 , Eb3, Eb4] of the stroke serve as the features for each stroke.

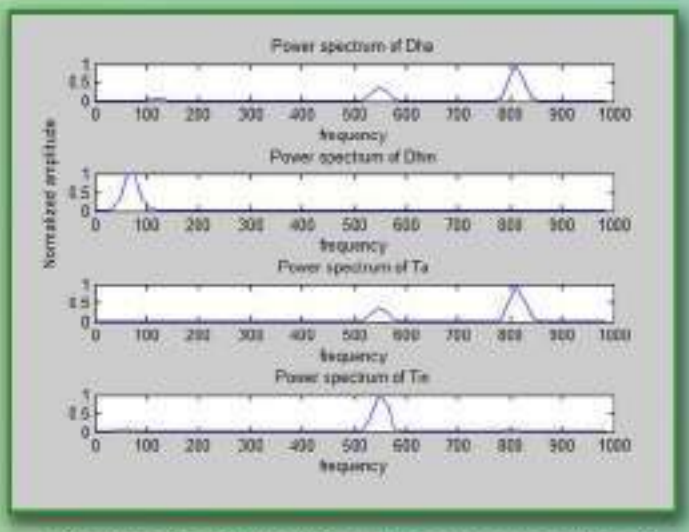

Figure 3: Normalized power spectra of strokes of Teental

C. Classification Technique

Decision logic derived from careful observation of power spectra of different strokes and the energies in four bands that is used to come up with proper decision rules and thresholds as shown in the Fig. 4. The accuracy of the system has been calculated as 56.67%.

```
If EB1 > T1
    If EB4 >T2
        Stroke is 'Dha'
    Else
        Stroke is 'Dhin
    End
Elseif  EB4 > T3  & EB3 > T4
    Stroke is "Ta"
Elseif  EB3 > T5
    Stroke is "Tin"
end
```

Figure 4: Decision logic used in approach 1

Algorithm derived stroke labels are written into a *Text Grid file and can be compared with the ground truth marked in the upper tier as shown in Figure 5.

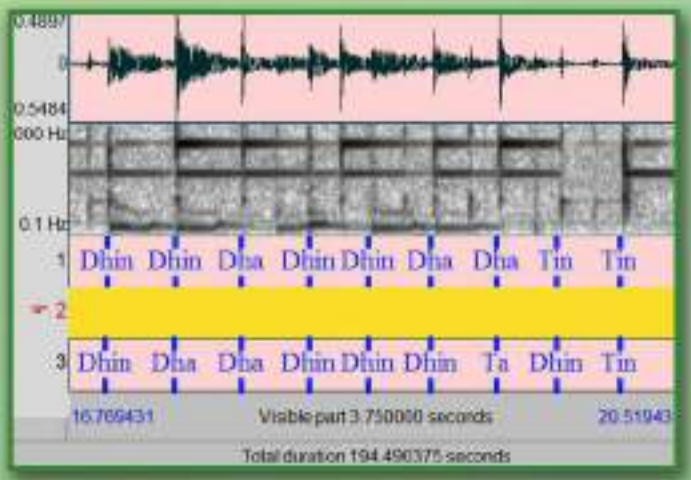

Figure 5: Ground truth labels of strokes in the upper tier and the algorithm returned labels in the lower tier.

Decision Tree for Classification

The results of the above approach that is based on limited number of observations of representative strokes of different categories of Teental points to a need for better algorithm that can come up with a decision logic derived from a good number of strokes comprising training set automatically.

Classification And Regression Tree (CART) analysis is used over here. Classification tree created using strokes from both TL31 and TL27. In the tabla recording, which is an actual performance, second Ta (13th beat) of each cycle is a variation from the usual Ta and the bol of this double stroke is Tita. While segmenting the stroke, the algorithm is taking in only Ti part of the double stroke. Due to this variation, pruning logic may be neglecting Ta stroke.

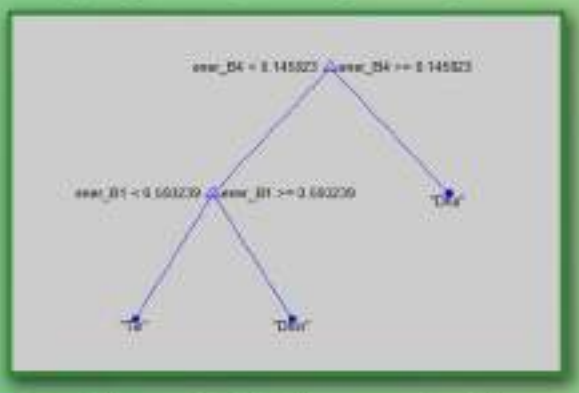

Figure 6: Subtree created by pruning to the best level

Accuracy of 90% is got by using a full tree and 75% is got by using a subtree pruned to the best level as shown in Fig 6. Comparison of decision tree predicted stroke labels and the manually marked labels is shown in the confusion matrix of Table 2.

Table 2: Confusion matrix for decision tree

	Dha	Dhin	Ta	Tin
Dha	11	0	0	1
Dhin	0	12	0	0
Ta	1	0	3	0
Tin	0	0	1	3

Table 3: Cross validation of the decision

Approach	I	II	III	IV
Dataset for training	32 strokes of TL31 & 16 strokes of TL27	16 strokes of TL31 & 32strokes ofTL27	48 strokes of TL31	64 strokes of TL27
Dataset for evaluation	48 strokes of TL27	32 strokes of TL27	64 strokes of TL27	48 strokes of TL31
Accuracy	87%	87%	55%	50%

Evaluation of the classification tree model for different sets used in training and testing in cross validation mode is tabulated in Table 3. As expected, training of the model using dataset comprising a combination of strokes from different performances is giving better results.

V. CONCLUSION AND FUTURE WORK

Onset detection that makes use of broadband nature or the 'percussivity' of the onset, is independent of the actual energy present. This proved to be a promising step towards segmentation of the audio. Labeling of tabla strokes using a decision tree approach, wherein the decision logic is derived from the energies in four bands as features showed fairly good results. The limitations of availability of a simple solo tabla performance which is not improvised much hindered the testing of the algorithm across many performances.

The variation in the rendition of strokes has been ignored in the present work. Including these variations and also other acoustic features in attack and decay region can bring in the robustness to the decision logic. The work can be extended to percussion transcription of a polyphonic audio that uses tabla as an accompaniment with lead melody. This will establish a rhythmic framework that is needed in many Music Information Retrieval applications.

ACKNOWLEDGMENT

The authors wish to thank Prof. Preeti Rao, IIT-B, Mumbai and Dr. Bhavesh Patel, Principal, SAKEC, Mumbai.

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SENTIMENT ANALYSIS OF महाभारत

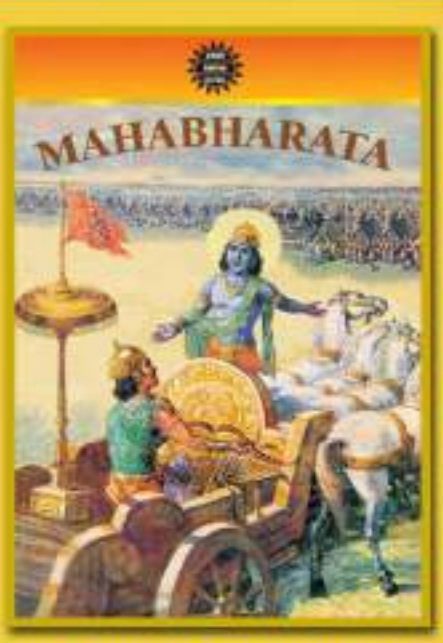
PAVRAVAS

यत् इह अस्ति तत् अन्यत्र यत् न इह अस्ति न
तत् क्वचित् ॥ १-६२-५३

Vaiśampāyana told Janamejaya,
What exists here may be found elsewhere,
What is not here can scarcely be found.
Mahabharata, Adi Parva Chapter - 62, verse-53

Although India's IT industry has been reporting record breaking profits year on year, the benefits of this superficial digital transformation rarely trickles down beyond tier-2 cities. A testament to this fact is that most Indian languages are considered low-resource despite having centuries of written literature. A language is generally considered low-resource when there are less than ten thousand annotated sentences for a given language pair. This becomes a problem for carrying out natural language processing tasks without machine learning.

Natural language processing (NLP) is a broad term encompassing everything from chatbots to speech recognition. We have to work with unstructured data for the majority of NLP tasks. Unstructured data means the information is not neatly organized in tables in a database. Written text, voice commands, sensor input are all examples of unstructured data which form a large portion of the data in the public domain. The easy way out would be to simply run a pre-trained language model on your corpus and get state-of-the-art results.



However, state of the art models have the drawback of giving jaw-dropping but unreproducible results, unless you have the means to afford the compute resources.

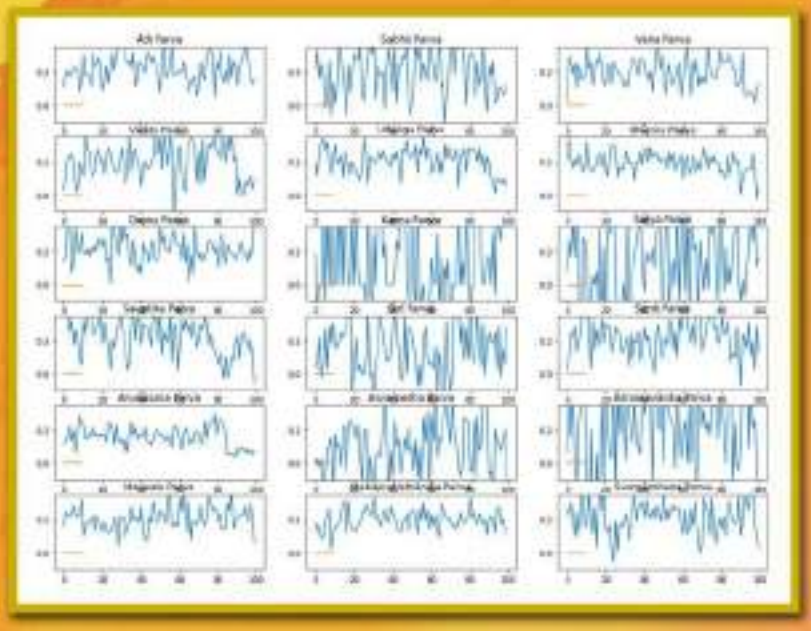
In order to work with text, it's often important that you encode it in numeric form. Mining Data from text includes building feature vector representations of text, which involves representing text in numeric form. Now let's say you have a host of labeled text data and you want to train a classification model, and you want this classification model to perform sentiment analysis. Once you have a fully trained classifier, you want to feed in input in the form of sentences, that is, text, and you want to get an output that tells you whether the text is positive or negative. In order to work with text, it's often important that you encode it in numeric form. Mining Data from text includes building feature vector representations of text, which involves representing text in numeric form. Now let's say you have a host of labeled text data and you want to train a classification model, and you want this classification model to perform sentiment analysis. Once you have a fully trained classifier, you want to feed in input in the form of sentences, that is, text, and you want to get an output that tells you whether the text is positive or negative.

There are multiple ways of transforming unstructured data into something a computer can understand. For our project we used the bag-of-words approach. In bag of words, we disregard the order in which the words occur in the text, giving them weights instead in accordance with the frequency with which they occur in the text.

Another approach is n-grams. Imagine a window sliding over your text, where n is the number of words that can be fitted in each window. You iterate over your text capturing the relation and relative position of words by adding the next word after your current n-gram and removing the first word of it, to form a new n-gram. This approach can pick up phrases and the relation between two words as long as they are not separated by a distance greater than n. Even Google with its massive resources does not store more than 7-grams for its search.

One-hot encoding is another approach for vectorizing text. Vectorizing means imposing a structure to our data. In 1-hot encoding, we put 1 if a word present in our dictionary occurs in a sentence.

In this way, we build features from our text data using the bag-of-words, as well as the bag-of-n-grams representation.This allowed us to gain insights from the Mahābhārata, summarize any given page of the text, classify any page into a category of topics- main war narrative, philosophy and side-quests. Then we plotted the change of sentiment from page-to-page by having the progress from 0% to 100% on the X-axis and the sentiment score from -1 (negative sentiment) to +1 (positive sentiment) on the Y-axis. We also plotted word clouds to garner information of the relative importance of the people mentioned in the Mahabhārata, and how their position changes with changing circumstances from Parva to Parva.



- Vedant Madane,
BE-7 (2020-21)

ALUMNI TALK

MY JOURNEY AT SAKEC

I am truly grateful for having been part of SAKEC. The environment here is very comfortable and makes one feel as a family. Our very respected Principal Sir, Dr. Bhavesh Patel, deserves all the applauses for all the very steps he has taken for the welfare of his students. Dr. V. C. Kotak, our Training & Placement Officer, his ability to empathize with students and, constant belief in us, fostered a sense of support and inspires all of us to learn new things.

To talk about EXTC-SAKEC, I would say, we have the best faculties one could have. Being knowledgeable, inspiring, and approachable, our faculty provides students with much guidance and mind-opening perspectives. It is because of them, and the hard work they put in, we could explore, learn and prove ourselves. It wouldn't have been possible without them to have been a consistent Gold-Medalist throughout my 4-year journey.

They made sure we have much knowledge on all the leading technologies, to prove ourselves in the corporate world. Our HoD, Ms. T.P. Vinutha was available for us whenever needed and made sure that apart from academics, we keep ourselves engaged in extra-curricular activities as well, by being a part of IETE Student Chapter. I would want to thank Mr. Rohan Borgalli, my mentor for always being supportive and guiding me throughout my journey and helping me consider my future path. I would also want to thank all my faculties, as each one of them has played an integral role in developing my skills and building my identity.

My advice to my juniors would be, be openminded, never be discouraged, confront the difficulties, look at the long-run, work towards your end goal, and stay relaxed and you will definitely succeed. I will always cherish these best days of my life and I am very proud and blessed to be a part of SAKEC.

- Ms. Dhruvi U. Shah,
BE (EXTC 2019-20)

Art Desk

- ART WORK BY,
NIDHI TANK
SE-7, EXTC

- ART WORK BY,
Yesha Jobanputra,
SE-7, EXTC

"Couture Art"

- Couture Art by,
Sandhya Jaiswal,
SE-7, EXTC

Indian Dancer

EYES ravished with rapture, celestially panting, what passionate bosoms aflaming with fire
Drink deep of the hush of the hyacinth heavens that glimmer around them in fountains of light;
O wild and entrancing the strain of keen music that cleaveth the stars like a wail of desire,
And beautiful dancers with houri-like faces bewitch the voluptuous watches of night.

The scents of red roses and sandalwood flutter and die in the maze of their gem-tangled hair,
And smiles are entwining like magical serpents the poppies of lips that are opiate-sweet;
Their glittering garments of purple are burning like tremulous dawns in the quivering air,
And exquisite, subtle and slow are the tinkle and tread of their rhythmical, slumber-soft feet.

Now silent, now singing and swaying and swinging, like blossoms that bend to the breezes or showers,
Now wantonly winding, they flash, now they falter, and, lingering, languish in radiant choir;
Their jewel-girt arms and warm,wavering,lily-long fingers enchant through melodious hours,
Eyes ravished with rapture,,celestially panting, what passionate bosoms aflaming with fire!

- A Poem by
Tarang Agle
BE-7

Memories down the Lane...

Meet The Team

Editorial Team

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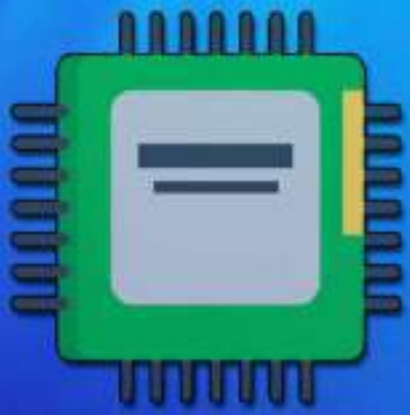
Program Educational Objectives

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.

(www.SAKEC.ac.in)



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