Sarvajanik Education Society

Sarvajanik College of Engineering & Technology

Towards progressive civilization...

A Report on

Multimedia Signal Processing Cup 2022

Event Date: 5th & 6th August, 2022

Organized by:

Sarvajanik College of Engineering and Technology

In association with

IEEE SPS GS, IEEE SCET SPS SBC

& IEEE SCET Student Branch

IEEE SCET, SB

IEEE Signal Processing Society GUJARAT CHAPTER

IEEE Signal Processing Society SCET STUDENT BRANCH CHAPTER

Team Behind the Event:

General Chair: Chirag Paunwala

General Co-chair: Jing Dong

Advisor: K V S Hari

Program Chair: Nehal Shah, Mita Paunwala

Organizing Chair: Sarosh Dastoor, Nirali Nanavati

Treasurer: Prof. Neeta Chapatwala

Organizing Committee Members: Arpan Desai, Ketki Pathak, Chintan Varnagar,

Program Committee: Ashish Phophalia, Manan Shukla, Bhaumik Vaidya, Dhatri Pandya

Student co-ordinators: Abanob Bhanu, Muskan Jhawar

Student Volunteers:

1. Takshil Kunadia, vice-chair, IEEE SCET SB
2. Palaksha Raskpoorwala, vice-chair, IEEE SPS SCET SBC
3. Rutvik Sojitra, Treasure, IEEE SPS SCET SBC
4. Aarya Shah
5. Ritavi Shah
6. Khushi Fatnani
7. Priyanshi Gehlani
8. Jill Saliya
9. Nimesh Sarvaiya
10. Saqlain Shaikh

Event Details:

Event Type: Project Competition

Event Mode: Hybrid

Event Platform: Google Meet (https://meet.google.com/yzt-hzej-emo)

Event Category: Technical Event

Event Date and Time: 6th August 2022, 10:00 IST to 18:00 IST

Event Accessibility: For registered participants

Event Related Links:

Website: https://ieeespsgs.org/mspcup/

Event Insight:

About the event:

The goal of this event was to turn data into information and information into insight. With a maximum of 5 members and 1 mentor, the participating team was given 2 contemporary domains to choose from. In the first round, teams were required to submit a 5-minute video clip, summarizing their work. In the final round, participants showcased their respective presentations alongside a working prototype in front of the jury members.

Problem Statement:

For the First Round, We had provided 2 contemporary problem statement based on which participating teams were required to make a 5 min video submission summarizing their work on chosen problem statement.

Challenge 1: Exercise pose recognition and counting sets

- We all know doing exercise helps our body and mind in many ways. People have hard time in counting how many sets they exercised and sometimes need assistance while performing the exercises for a long time. The assistance required is preferably counting how many sets are performed and reminder people on specific intervals.

Objective:

- To achieve the aforementioned goal, develop an AI enabled virtual assistant which can run on a mobile phone or a laptop for workout lovers. The virtual assistant should be performing both exercise recognition, set counting and posting feedback in real time.
- The assistance can be a mobile application/web application/desktop application/ console application without GUI also. It can be developed in any programming language or platform of your choice. Language preference can be Python as it supports most of the AI based libraries in the market. The participants are free to utilize any pre-trained model for preprocessing/human detection/body landmark estimation. However, exercise recognition model (using statistical/Machine Learning/Deep Learning modeling) should be designed and trained by the participant only.

Dataset:

- The given 'Weightless Exercise Dataset' contains short videos collected from YouTube. The dataset contains 3 different types of exercises such as 1) Surya Namaskar, 2) Squat, 3) Pushup (to prepare dataset). Each video contains one type of exercise performed one or more times. Further processing such as cleaning, standardizing videos, annotation of single exercise set within a video, are left to participants. The participants are free to enrich the dataset with more videos from web.
  http://ieeespsgs.org/wp-content/uploads/2022/07/Exercise.zip

Evaluation Criteria:

- Participants can demonstrate the system using screen recording (with application running live) which can be submitted as a video. It is encouraged that participant themselves appear on the video demo doing the three different exercise types. The demo video should showcase features such as duration counting, feedback generation after certain count intervals. The participants are encouraged to be innovative in the behavior of the application. Final submission should include the demo video, code (with instructions to install and execute), and the dataset created. The demo video should preferably cover exercises performed with speed, different camera angles, lighting conditions, distance from camera etc.

Challenge 2: Speech Language Recognition

- World is known for its great diversity in language, music, religion, food and culture. Many individuals are multilingual in nature who are capable of speaking two or more languages such as English, Malay, French, Hindi etc. Running a language speech AI model in real time is highly difficult as people suddenly switch from English to French or Spanish to English. To resolve this issue, any speech system should identify the language first then load the language specific speech AI model.

Goal:

- To tackle the mentioned scenario, develop an AI based audio language recognizer which can accept user voice in real time and display the language spoken.
- Participants are free to develop/customize any AI model (statistical/Machine learning/Deep Learning model) to achieve this goal. Ready-made Deep Learning architectures or pretrained models from internet are highly discouraged for submission. The partici-

pants should develop a AI speech model which can recognize minimum 3 languages (English and two other languages of their choice) at a time.

- One English dataset is mandatory to include for the model.

Dataset:

OpenSLR Dataset for English is an open source dataset with different accents
https://openslr.org/83
Indian Datasets:
https://www.twine.net/blog/top-indian-language-datasets/
Audio Dataset with 10 Indian Languages
https://www.kaggle.com/datasets/hbchaitanyabharadwaj/audio-dataset-with-10-indian-languages
Mandarin Datasets: https://www.twine.net/blog/mandarin-chinese-langauge-datasets/
Indonesian Datasets: https://www.twine.net/blog/indonesian-language-datasets/
Arabic Datasets: https://www.twine.net/blog/best-arabic-language-datasets/
Japanese Datasets: https://www.twine.net/blog/japanese-language-datasets/
Portuguese Datasets: https://www.twine.net/blog/portuguese-language-speech-datasets/
German Datasets: https://www.twine.net/blog/best-german-language-datasets/
Spanish Datasets: https://www.twine.net/blog/top-spanish-speech-datasets/

- The participants should train minimum 3 of the languages for the challenge from the above dataset lists where English is mandatory and two other languages of their choice. Participants are free to use as many datasets from different sources for a specific language.

Evaluation Criteria:

- Participants can demonstrate the language recognition system using screen recording video. The video recording should demonstrate the real time recognition of 3 languages. The participant should test the system with their own speech in the demo. If the participants do not know more than one language then they are free to test other languages using a colleague or with audio file from web. Recognizing multiple languages (more than 3) one after the other in real time is highly encouraged. Participants can have the freedom of customizing the behavior of the application in innovative ways.

Final submission should include the demo video, code (with instructions to install and execute).

Registration and Event management:

Registration of the event started on 10th July 2022 and a total of 33 teams registered for the event, from all over the country. A total of 14 teams were qualified for the final round.

Throughout the presentation session, there was strong and lively communication between teams and jury members. Jury members gave excellent constructive criticism alongside their valuable suggestions to participating teams. All the attendees, students and delegates demonstrated great satisfaction towards the event as well as participating teams expressed their gratitude with a positive feedback.

The event was anchored by Ms. Keshvi Pipwala and Ms. Tanushree Doctor, III Year Computer Engineering Student of SCET, Surat.

The event was very well-managed by Dr. Chirag Paunwala, Chair, IEEE SPS GS, Prof. Sarosh Dastoor, Advisor, IEEE SPS SCET SBC, Dr. Nirali Nanavati, Digital Content Chair, IEEE SPS GS, and Prof. Dhatri Pandya.

Prize:

Total Prize worth $1500 USD

- All the Winners were awarded with Trophy and Certificate of Appreciation.
- All the Participants were given Certificate of Recognition.

Jury Members:

1) Dr. Ahlad Kumar :

Dr. Ahlad Kumar received the B.Tech degree in Electronics and Communication Engineering from Jamia Millia Islamia, India, in 2005. He completed his M.Tech and Ph.D. degree from ABV-IIITM and University of Malaya in 2005 and 2016 respectively. From 2017 to 2019, he was a Postdoctoral Research Fellow with Concordia University, Montreal, Canada. He is currently an Assistant Professor at Dhirubhai Ambani Institute of Information and Communication Technology, India. Dr. Kumar has served as a reviewer for several international journals and conferences. His research interests include image processing and analysis, machine learning, and deep learning.

2) Dr. Priyanka Sharma :

Dr. Priyanka Sharma have work experience of over 23 years that spans both Industry and Academia, She specialize in leading AI and Data Analytics based application development and integrated solution design for various inter-disciplinary domains like Industrial Automation, Healthcare, Pharma sectors.

Currently, She is working as Vice President Projects - AI at Samyak Infotech Pvt Limited, a software based company that has made its mark for providing end to end Enterprise Solutions for Logistics Management Companies in US, Shipping companies in UK and several other hardware based projects like Stability Chambers and IoT based preventive maintenance systems for various Industries, Healthcare and Pharma sectors.

She is also member of the National Level Subject Expert committee (for AI Projects) of some of the project funding scheme of DST (Government of India) and am Executive Committee Member of Computer Society of India - AC.

3) Dr. Bhaumik Vaidya:

Dr. Bhaumik Vaidya is an experienced computer vision engineer and mentor. He has worked extensively on OpenCV and Tensorflow Library in solving computer vision problems specifically in the medical and automobile domain. he is a University gold medalist in masters and now doing a Ph.D. in the acceleration of computer vision algorithms built using OpenCV and deep learning libraries like Tensorflow and Keras on GPUs. he is using Tensorflow Lite for deploying deep learning models on mobile platforms like Android and iOS along with his Ph.D. mentor, have also received an NVIDIA

Jetson TX1 embedded development platform as a research grant from NVIDIA. he working on GPU Embedded platforms like Jetson Tx1, Jetson nano, and Google Coral as a part of my research.

Inauguration of Event:

The inaugural ceremony of the R10(Asia Pacific) Level on "Multimedia Signal Processing Cup 2022" commenced with the lighting of a lamp by a group of dignitaries of Sarvajanik University and Sarvajanik College of Engineering & Technology - Prof. Persi Engineer (Provost, SU), Prof. Hiren Patel (Principal, SCET), Prof. Nehal Shah (Head, Department of Electronics & Communication), Prof. Chirag Paunwala (Dean R&D, SCET and Chair IEEE SPS GS) and Prof. Sarosh Dastoor (Membership Development Chair, IEEE SPS GS). The program was followed by Saraswati-Vandana. Volunteers have done a floral welcome of all the dignitaries and jury members.

Prof. Hiren Patel formally welcomed all the dignitaries present on the dais and participants from various parts of the country & students. He mentioned the significance of taking part in such project competitions and its aims of bringing together a core group of AI, ML, and Computer Vision all over the R10 Region with significant participation from our own state Gujarat.

Prof. Chirag Paunwala described the importance of the Multimedia Signal Processing Cup, as the event was inspired by the International Level competition VIP Cup and ICASSP. He motivated everyone to actively participate in a such competition to get benefited.

In his address, Prof. Sarosh Dastoor briefed about the importance of the MSP Cup and our esteemed resource persons. He wished for the success of the event and inspired the participants.

Prof. Persi Engineer welcomed the participants and motivated them to learn irrespective of the results. He appreciated the efforts of the IEEE SCET Student Branch and IEEE SPS GS to host such a great event on the premises of SCET.

In the end, Prof. Nehal Shah (Organizing Chair of the Event) offered a vote of thanks to all the dignitaries, jury members, coordinators, and volunteers of the event. She thanked all the guests and participants for gracing the occasion with their solemn presence. She also thanked all the lab assistants for providing all kinds of facilities to conduct the such event in the center.


IEEE
IEEE SCET SB
MULTIMEDIA SIGNAL PROCESSING CUP
5th - 6th August 2022
Worth
USD 1,500/-


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For Any Queries Contact
Prof. Hiren Patel


SHETH L.N. FACULTY OF EEC DEPTT.


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MULTIMEDIA SIGNAL PROCESSING CUP 2022

Agenda:

SARVAJANIK EDUCATION SOCIETY
Sarvajanik College of Engineering & Technology, Surat

MSP CUP 2022

Date : **Saturday, 6th August 2022**
Time : **10:00 AM onwards**
Venue : **SCET EC AV Room**

AGENDA

Sr. No.	Item	Hosted By	By	Min
1.	Lighting of the lamp	Host	All Dignitaries	3
2.	Floral Welcome to the dignitaries and the Jury members	Host	• Abanob Bhanu (Chair, IEEE SCET SB) to Prof. Persi Engineer, Provost, SU • Muskan Jhavar (Secretary, IEEE SCET SB) to Prof. Hiren Patel, Principal, SCET. • Takshil (Vice Chair, IEEE SCET SB) to Dr. Ahlad Kumar • Aarya Shah to Dr. Bhaumik Vaidya • Online welcome to Dr. Priyanka Sharma	3
3.	Welcome speech	Host	Prof. (Dr.) Hiren Patel, Principal, Faculty of Engg.	
4.	Motivation for the event	Host	Prof.(Dr.) Chirag Paunwala, Dean R&D , Chair IEEE SPS GS	3
5.	About MSP Cup	Host	Prof. Sarosh Dastoor, Membership Development Chair IEEE SPS GS	3
6.	Inauguration of the MSP Cup event	Host	Prof. Persi Engineer, Provost, Sarvajanik University	
7.	Vote of Thanks	Host	Prof.(Dr.) Nirali Nanavati, Digital Content Chair, IEEE SPS GS	2
.	Presentation and Viva by the shortlisted participants	Host	Participants - 10 minutes for each presentation followed by 10 minutes discussion.	
Master of Ceremony: Tanushree and Keshvi				

Presentation and Evaluation:


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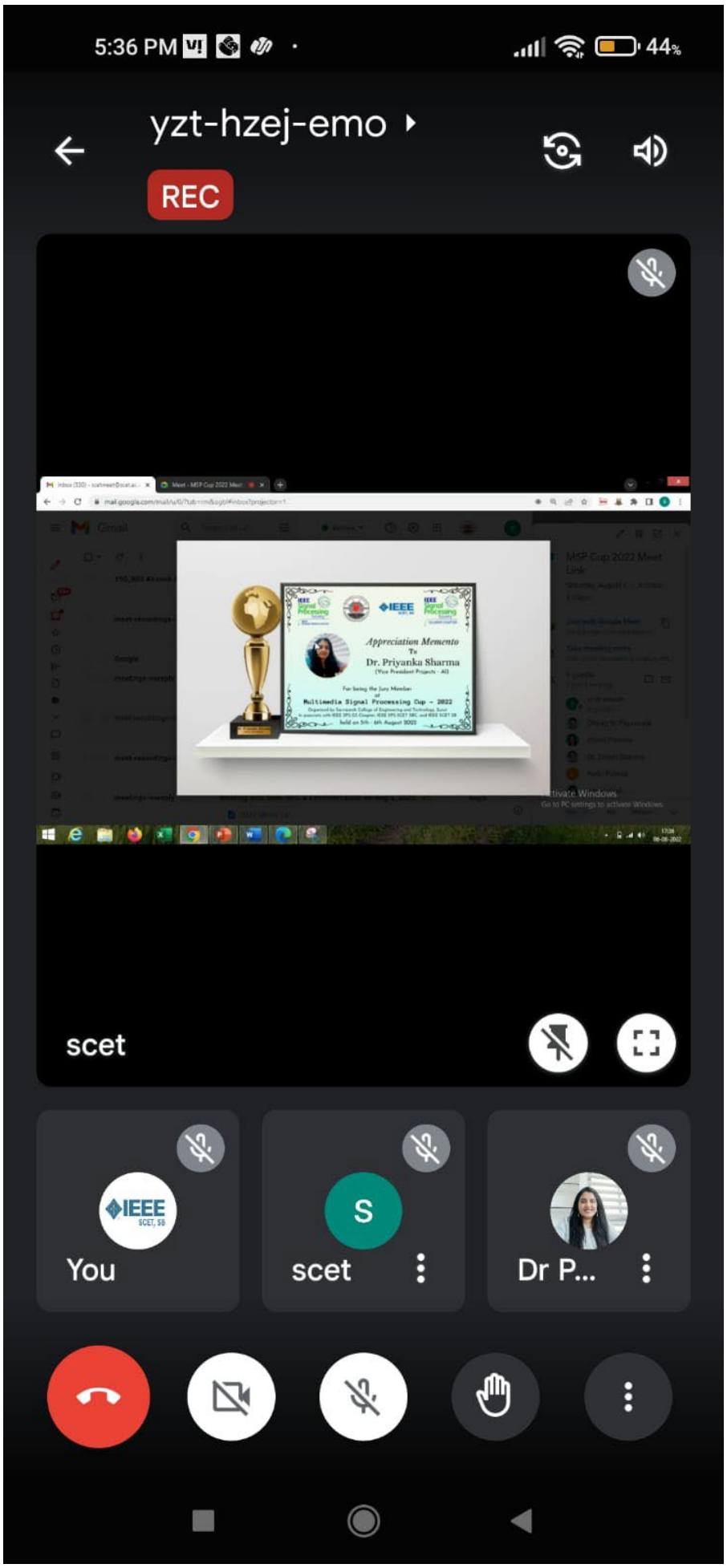
Worth
USD 1,500/-

Gratitude to jury members: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Appreciation Memento
To
Dr. Priyanka Sharma
Multimedia Signal Processing Cup - 2022
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You
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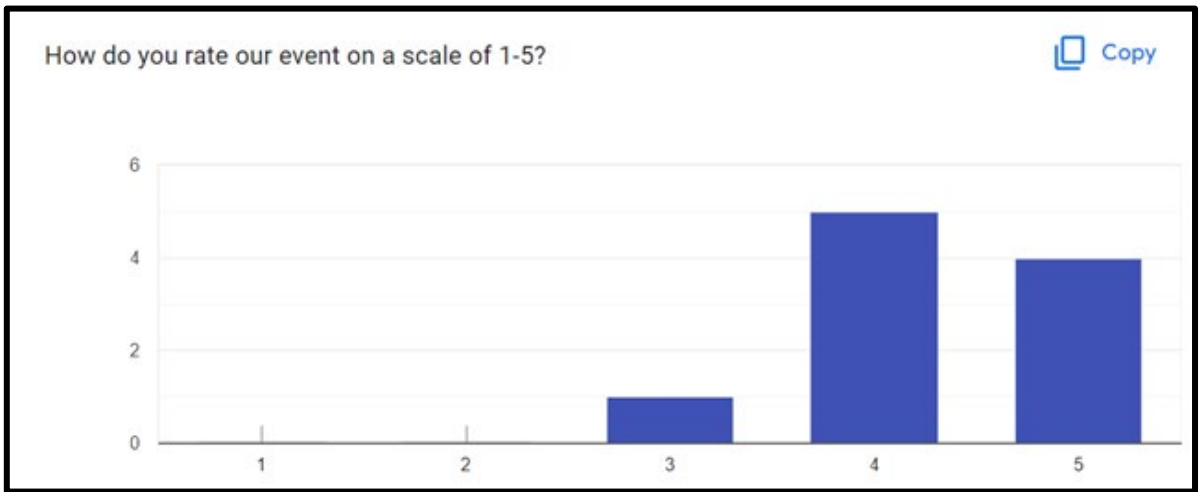
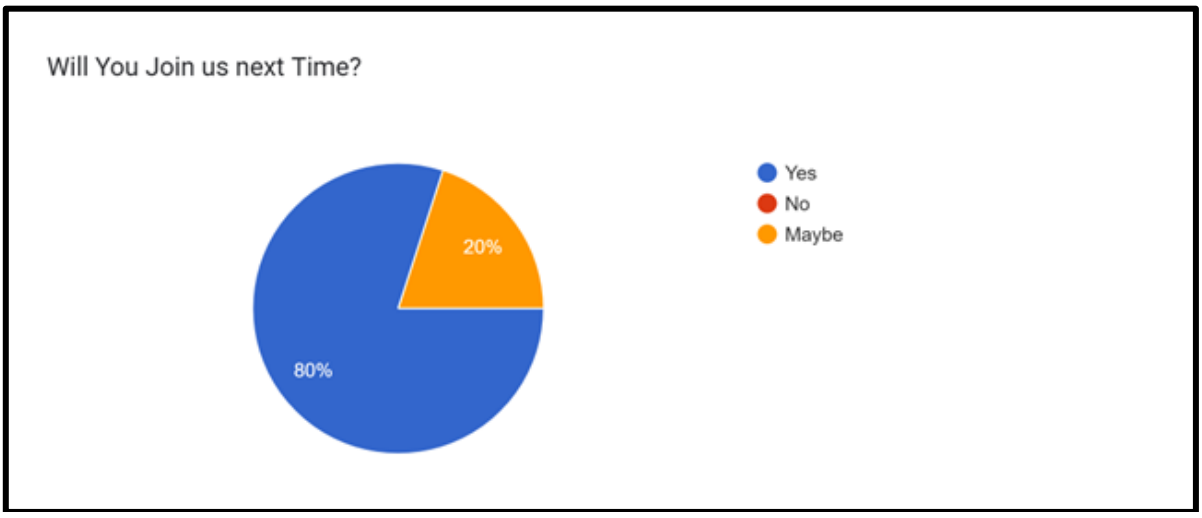
Dr P...

Feedback:

Feedback was provided by the participants, jury members, and Prof. Mita Paunwala (Vice-Chair, IEEE SPS GS).





In Future Which kind of competition you want?

Hardware + software based application
Ralated to web
A competition related to mixture of domains
HACKATHON
We want competitions just like this which solves the real world problems
Quiz based

Your Experience writes here. Thank you to be part of this event

It was very enjoyable event..
I learned lot of things from this event so thank you
The event was long and they should have provided accommodation. For lunch only 100 rs was given.
Nice event. Very educative
We got the experience of national level competition and got to learn new things other than regular syllabus.
Experiance was good. The jury was very knowledgeable
Thank you so much invite us
It was a great experience !
Me and my team mate learn so mang things. We got to know where we were lacking. Thr support and help was great just can't say it. And overall everything was to good

Your valuable suggestions.

NA
Next, time please hold the event in a big hall
Good event. Learnt alot
Excellent
I enjoyed participating the competition just felt nervous when they suddenly decided to present in front of everyone Other than that it was good
Organization is amazing. Keep notify in advance.
The online method of presentation could have been made better.
The arrangement and coordination good. Nothing to change. Just keep it up.


NAL PROCESSING CUP 2022
6th August 2022
acer

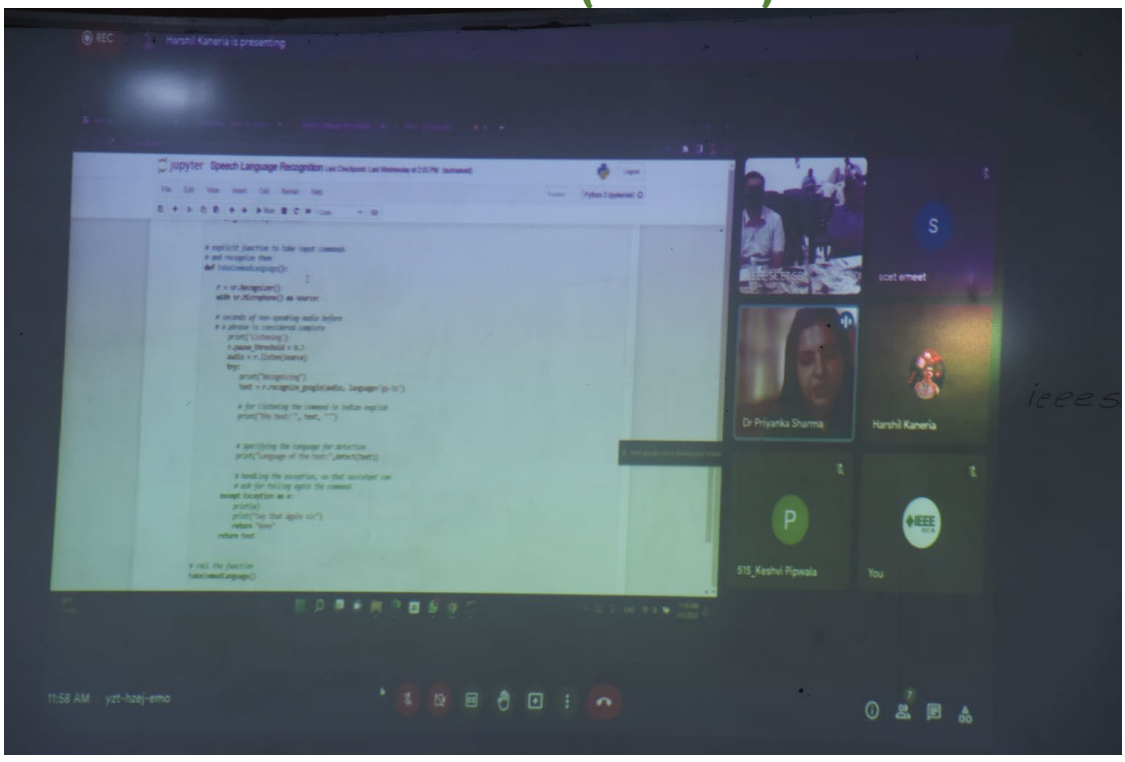
Winners:

Challenge 1: Exercise pose recognition and counting sets

WINNERS

1st Prize

2nd Prize (Online)



Challenge 2: Speech Language Recognition

WINNERS

1st Prize

2nd Prize

Report Compiled by: Abanob Bhanu, Chair, IEEE SCET SB and Muskan Jhawar, Secretary, IEEE SCET SB