

## **Assistive Technology Group (AT) Activity/News Tracker**

<b>July 2024 - June 2025</b>	<b>3</b>
1. Assistive technology Internship 2025, 9th June to 20th June 2025	3
2. AccessAbility: Technology for Inclusion, April 4, 2025	6
3. CDC meeting at Medical College, Trivandrum, 11th March 2025	6
4. Child Development Centre (CDC) online meeting, 5th February 2025	7
5. AT project proposals - screening, 10/12/2024	8
6. Meeting with NISH: Sign Language Recognition and Translation Systems, December 9, 2024	10
NISH project proposal	11
7. Empower 2024, October 17-19, 2024	11
8. Call for AT project proposals - 1st October 2024	12
9. Meeting with NISH: SignLingo, Aug 19, 2024	12
NISH project proposal on SignLingo	13
10. AT internship 2024 (separate file available), 1 to 12 July 2024	13
<b>July 2023 - June 2024</b>	<b>14</b>
1. Project on 'ALERT SYSTEM USING VIBROTACTILE TECHNOLOGY FOR HEARING IMPAIRED', guided by Dr. M. J. Jayashree, Professor, ECED, March 2024	14
2. FDP on "Recent Trends in Healthcare and Assistive Technology" from Jan 29, 2024 to Feb 2, 2024.	16
3. Discussion on 'Deep Learning based Text-to-Speech (TTS) Model' on 28 November 2023:	16
4. NSS MBCET Activity on Assistive Technology:	17
5. Student Buddies with NISH-IYWD:	18
6. Discussion with NISH on Cleft related project proposal	18
7. Blind swimmer project update	18
<b>July 2022 - June 2023</b>	<b>19</b>
1. I-YwD (Innovation by Youth with Disabilities) Cohort 3 Selection Camp venue at MBCET: 12th and 13th of May 2023	19
2. Assistive Technology Internship 2023: 17 April - 28 April 2023	20
3. Visit to NISH	21
4. Online meeting with DHI, NISH	21
5. Mentor Sensitization Program: I-YwD Cohort at NISH	22
6. Delegation to TCS	23
7. Inauguration of Placement drive of Acsia for differently abled engineering students:	23
8. Assistive Technology Conclave	24
9. MoU with National Institute of Speech and Hearing under the scheme Innovation by Youth with Disabilities (I-YwD)	25
10. Program Committee: Empower 2022	25
<b>July 2021 - June 2022</b>	<b>26</b>
1. MBCET-AT group meeting	26

2. NISH-MBCET Project Ideas meeting	26
3. NISH CATI – MBCET meeting (16 Sep 2021)	26
4. AT Meeting to discuss MIND (Mobility in Dystrophy)	27
5. SPACE HACK - student project on Space Technology for All	28
6. Head Mouse Project at NISH	28
<b>July 2020 - June 2021</b>	<b>29</b>
1. NISH CATI – MBCET meeting (1 June 2021)	29
2. Alert Project at NISH	29
3. Joint project with NISH on 'Speech therapy system for children with cleft lip and/or palate':	30
4. NISH-MBCET AT Project Discussion on April 30, 2021	30
5. Faculty visit to NISH on 25 March 2021	31
6. AT Internship 2019 intern - update	32
7. AT Internship 2020	33
<b>July 2015 - June 2020</b>	<b>34</b>
1. Visit to NISH AT devices Display	34
2. Visit to Kanthari, Vellayani	35
3. Project Presentation at NISH	36
4. Accolades of Students from Assistive technology Group	38
5. MoU signed between MBCET and NISH	38
6. CASHI (Connected Announcement System for Hearing Impaired) project successfully installed in a computer lab at NISH	39
7. Final Demo of Speech Analyzer: 27th March 2018	40
8. Internship at NISH: July 2017	40
9. Oct 14, 2017: NISH Day 2017	40
11. Project Demonstrations:	40
13. January 12, 2017: Talk on 'Technological advances in neuroscience, hearing and voice'	42
15. July 24, 2015 – First meeting at NISH	42

**July 2024 - June 2025**

## **1. Assistive technology Internship 2025, 9th June to 20th June 2025**

### **Assistive Technology Internship Report**

The Assistive Technology Internship 2024 began with the inauguration on 9th June 2025 by Dr. M. J. Jayashree, Head, Assistive Technology Group and Dean (Academics - UG) who also delivered the first session, "Exploring the World of Assistive Technology." She introduced the students to the fundamental idea that assistive technology is not just a subject — it is a mission. A mission to use engineering, empathy, and innovation to improve the lives of people with disabilities. Her talk laid a strong foundation and helped them look at technology through a lens of inclusion.



The momentum continued with an inspiring online session by Prof. M. Balakrishnan, who took the students through his incredible journey with ASSISTECH. His stories of innovations like the SmartCane and tactile educational tools were proof that when thoughtful design meets a genuine need, the results can transform lives.

The students also had the privilege of interacting with Mr. P. Balaraman, a visually impaired national-level chess player, who reminded them that disability is not a limitation — it is a challenge that technology can help overcome. His live demo of playing chess without sight left them in awe.

On 10th June 2025, the students explored the intersection of health and technology. Dr. Soumya A.V. spoke about Smart Living and how wearables and IoT tools are helping us monitor and manage lifestyle diseases. Mr. Mahadevan, from Adarsh Charitable Trust, opened their eyes to the world of neurodivergent individuals and the impact of early intervention.



The day ended with a hands-on session by Mr. Vishnu P Kumar, Co-Founder and CTO of Unibotix Innovations Pvt. Ltd. The students built a DIY pulse monitor — turning theory into practice.

On 11th June 2025 the students had a field experience with a visit to the Child Development Centre at the Medical College, Thiruvananthapuram. There, they saw first-hand how assistive technologies are integrated into real clinical practices — from speech therapy to occupational rehabilitation. In the second session, Ms. Nincy Mondly, a psychologist, reminded them that emotional and psychological care is just as important as physical support.

On 12th June 2025, they focused on inclusive innovation. Dr. Lani Rachel Mathew inspired them with a talk titled “Empowering Humanity through Innovation.” They then had hands-on activities, scanning printed pages using OCR and recording audiobooks from children’s magazines to support visually impaired learners. Later, a visit to Pallium India gave them a heart-touching view of how technology can support palliative care, especially for those facing life-limiting conditions.

On 13th June 2025 the students visited NISH, where they explored campus accessibility features and participated in sensitization activities — walking blindfolded with a cane, using a wheelchair, and trying to perform tasks with one hand. These simple yet powerful exercises made them understand, on a personal level, the everyday challenges faced by individuals with disabilities. On 14th June 2025, the students stepped into the role of observers — conducting a public space accessibility survey. This activity gave them real-life context for identifying gaps in infrastructure and proposing improvements through thoughtful design.

16th June 2025 featured a visit to SCTIMST, Poojapura, where they explored labs and research in neuro-rehabilitation, biomedical instrumentation, and medical assistive devices. Later, Mr. Arun J S helped us dive into the process of project ideation — showing us how to define problems, understand user needs, and build technology with purpose.

17th June 2025 was a day of student-driven learning. A team of MBCET alumni presented a well-researched session on Autism Spectrum Disorder, focusing on behavioral and sensory challenges and how tech can bridge those gaps. The students also had a low-tech project showcase, where simple but impactful innovations were presented. The day ended with a visit to the Laurie Baker Centre, where they were introduced to the principles of sustainable and inclusive architecture — a reminder that accessibility is not just digital or medical, but environmental too.

On 18th June 2025, the students had a hands-on IoT workshop led by Mr. Jijo Jose, where they explored sensors, microcontrollers, and cloud-based health monitoring systems. In the second session, Dr. Sreedevi P emphasized the

importance of ethical, user-centered design in assistive technology, encouraging them to always keep the end user at the center of innovation.



On 19th June 2025 the focus was on Digital Accessibility — a critical but often overlooked aspect. The students learned how inclusive design in websites, apps, and digital content can empower or exclude users. The session gave them practical insight into how even small changes — like readable fonts, screen reader compatibility, or intuitive navigation — can make a world of difference.

On 20th June 2025, Project presentations, where each team proposed assistive tech ideas based on real user needs were conducted. The internship concluded with a valedictory function presided by Dr. S. Viswanatha Rao, Principal, MBCET.

### In Social Media:

#### ☀ Empathy in Action: 1st week of Assistive Technology Internship 2025

Five unforgettable days that opened eyes, stirred hearts, and rewired minds. From visionary talks by pioneers to real-world impact through audiobooks, scanned texts, and heartfelt field visits — students didn't just learn about assistive technology, they felt its power. At CDC, Pallium India, and NISH, perspectives shifted forever. This wasn't just an internship — it was a movement. A journey of empathy, action, and purpose-driven innovation.

<https://www.instagram.com/p/DLB2QHHLBe/?igsh=MTlwOTJvbmG0cHZpdg==>

#### ☀ Closing with Clarity: 2nd week of Assistive Technology Internship 2025

As the journey neared its end, these days brought a deeper sense of purpose and confidence. The experiences shaped not just skills, but mindsets—reminding students that innovation becomes meaningful only when guided by empathy. With every interaction, idea, and reflection, the final stretch became a space



of growth, gratitude, and inspiration for what lies ahead.

[https://www.instagram.com/p/DLSIS1\\_yjZ1/?img\\_index=1&igsh=MWQ0OGdreHRIcjZsMA==](https://www.instagram.com/p/DLSIS1_yjZ1/?img_index=1&igsh=MWQ0OGdreHRIcjZsMA==)

## 2. AccessAbility: Technology for Inclusion, April 4, 2025

A session by experts from **National Institute of Speech and Hearing (NISH)** on how technology can enhance accessibility was organized by the Assistive Technology Group, MBCET, in association with IEEE EMBS SBC on April 4, 2025 from 1:00 PM - 2:00 PM at Faraday Hall, MBCET. The sessions were handled by Mr. R. Deepu Raj, Senior Engineer, CATI, NISH, Mr. Amith G. Nair, Principal Co-Investigator, NCAHT, NISH and Ms. Arya M. S., Project Research Scientist, NCAHT, NISH. 29 students of S2 and S4 from various departments of the college participated actively in the sensitisation activities related to empowerment of differently abled persons.

**Student Coordinator:** Mr. Gokulraj R, S6 EC

**Faculty Coordinators:** Dr. Shalu George (Associate Professor, EED) and Ms. Amritha BJ (Asst. Professor, ECD)



## 3. CDC meeting at Medical College, Trivandrum, 11th March 2025

A meeting at the Child Development Centre was conducted on 11th March 2025, from 1:30 pm to 2:30 pm.

**Participants:**

CDC: Dr. M. L. Leena (Senior Research Coordinator), Mr. Vineed Kumar Vijayan (Registrar,CDC) and experts from various departments of CDC.

MBCET: Dr. Sreedevi P., Associate Professor (ECE), Dr. Lani Rachel Mathew, Assistant Professor (ECE) and Ms. Vineetha V. K., Assistant Professor, CSE.

#### **Discussion:**

Dr. M. L. Leena, Senior Research Coordinator, and experts from various departments of CDC interacted with Dr. Sreedevi P., Associate Professor (ECE), Dr. Lani Rachel Mathew, Assistant Professor (ECE) and Ms. Vineetha V. K., Assistant Professor, CSE. The Registrar of CDC, Mr. Vineed Kumar Vijayan discussed possibilities of jointly developing an AI based Health Management Information Systems (HMIS). Some projects identified were as follows:

#### **Learning Disability:**

1. Dyscalculia -Mobile app development, 2. Language Assessment assistive device, 3. Autism Assessment, 4. Functional Academic Assessment, 5. Writing Improvement Assistive Devices, 6. Electronic Worksheets for Attention management, etc.

#### **Speech therapy**

1. AAC Device, 2. App or device like Aavaz

#### **Occupational Therapy**

1. Bubble Tube, 2. Mirror Ball Light, 3. Weighted Blankets, 4. Vision Stimulation Lightbox, 5. X ray reader

#### **Audiobooks for visually impaired**

**Smart Classrooms:** ADHD room, FM system for Hearing Impaired

### **4. Child Development Centre (CDC) online meeting, 5th February 2025**

An online meeting with the Child Development Centre was conducted on 5th February 2025.


Link: <https://meet.google.com/enj-bqax-nrd>


Time: 10:30 am to 11:00 am. The Registrar of CDC, Mr. Vineed Kumar Vijayan and Ms. Sinu Jiji participated from CDC. Dr. S. Viswanatha Rao (Principal, MBCET), Dr. M. J. Jayashree (Dean Academics and Head, Assistive Technology Group), Dr. Luxy Mathews (HoD, ECED), Dr. Sreedevi P., Ms. Teena Rajan and Dr. Lani Rachel Mathew attended the meeting. During the meeting, Mr. Vineeth discussed the process of presenting project proposals before the Ethics Committee, before any technology based project is taken forward. Project ideas can be collected from CDC staff members, in consultation with Dr. Leena, Research Head, CDC.



## 5. AT project proposals - screening, 10/12/2024


Reminder: Online Presentation for Assistive Technology (AT) Project Proposals

 Date: (10/12/2024)

 Time: 9:30 AM - 12:30 PM

 Platform: <https://meet.google.com/gsy-omqm-gcx>

**Panel members: Ms. Amritha BJ, Dr. Lani Rachel Mathew, Assistant Professors, ECED**

 Instructions for Participants:

- Ensure your presentation is concise and clear, covering your idea, methodology, and expected impact.
- Be ready to answer questions from the panel.
- Join the session at least 10 minutes early to avoid delays.



Group 1

Topic : Sign Language Recognition and Translation Systems for Enhanced Communication with the Hearing Impaired

Members:



1) Abhiram M Ajay,2) Maria Sara Raju,3) Sona Ponnachen,4) Sriram S

Guide Name : Dr. Lani Rachel Mathew

Class : S8 EC1

Group 3

Topic: communication device for mute and paraplegics

Members:

Amanda sheena james

Rishikesh rajeev

Sheetal sanjay

Class : S5 CT

Group 5

Title - Continuous Passive Motion Machine for Elbow Physiotherapy

Members-

Jithin G.S

Joel Daniel

Sharon Thomas

Varshidha S.R

Guide - Dr. M.J Jayashree

Class- S8 ECE 2

Grp 6

Topic : Reduction of vibration noise induced by electrolarynx and amplification of low frequency voice signal.

Members: Alwin John

Gourisankar GP

Haeba Sara Alexandar

Kurien P Issac

Class : S5 EC1

Group 4

Topic: Door Automation

Members: Nandana Krishna

Aathish R Viswam

Vishnu BS

Class: S5 EL



## **6. Meeting with NISH: Sign Language Recognition and Translation Systems, December 9, 2024**

NISH-MBCET: Project Discussion on 'Sign Language Recognition and Translation Systems' Monday, December 9 · 3:00 – 4:00pm

Join with Google Meet

[meet.google.com/onc-vdvk-kne](https://meet.google.com/onc-vdvk-kne)

Participants:

ECE, MBCET: Dr. Lani Mathew, Maria Sara Raju, Sona Ponnachen, Sriram S., Abhiram Ajay (ECE, MBCET)

DHI, NISH: Prof. Raji Gopal, Prof. Raji NR



## NISH project proposal

A project proposal on 'Sign Language Recognition and Translation Systems for Enhanced Communication with the Hearing Impaired' by final year ECE students was submitted to Prof. Raji Gopal and Prof. Raji NR of NISH, on Nov 22, 2024 .

Team members (Name & Contact details):

1. Abhiram M Ajay (Ph. No: 8281409098)
2. Maria Sara Raju (Ph. No: 8138981491)
3. Sona Ponnachen (Ph. No: 6282029536)
4. Sriram S (Ph. No: 8848703725)

Guide : Dr. Lani Rachel Mathew, Asst. Professor, Dept. of ECE

## 7. Empower 2024, October 17-19, 2024

Dr. Lani Rachel Mathew, Asst. Professor (EC), Ms. Sherin Joseph, Senior Office Assistant (Library), Dr. Veena Nair, Asst. Professor (S&H), Ms. Merin Sarah Thomas (S7 EEE) and Mr. Akash S. Gopinath (S7 EEE) participated in the three day international conference, "Empower - Assistive Technology Conference" held at NISH, Thiruvanthapuram, from October 17-19, 2024.



## 8. Call for AT project proposals - 1st October 2024



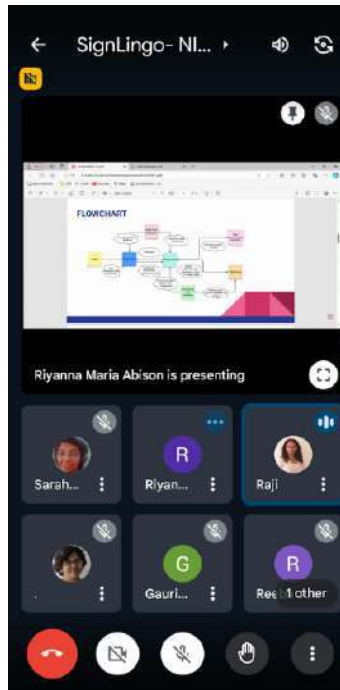
As a follow up activity of the AT internship, IEEE EMBS MBCEET invited students to submit Assistive Technology (AT) project proposals to develop devices and tech interventions for the differently abled and aged. Important Dates: Extended Abstract Submission Deadline: October 14, 2024 o Details: Topic, Team, Methodology, Block Diagram, Circuit Diagram, Estimated Budget.

## 9. Meeting with NISH: SignLingo, Aug 19, 2024

Meeting link: [meet.google.com/fum-amfd-zfk](https://meet.google.com/fum-amfd-zfk)

Monday Aug 19, 2024 · 2:25pm – 3:25pm (India Standard Time - Kolkata)

Guests: Gauri Shree V K - organizer, Lani Mathew, Raji Gopal, Raji NR



### **NISH project proposal on SignLingo**

A project proposal on an interactive learning mobile application named SignLingo was sent to Prof. Raji Gopal and Prof. Raji NR of NISH on August 7, 2024. The students involved are Ms. Krishnapriya Deepak, Ms. Reeba Jomin, Ms. Riyanna Maria Abison, Ms. Sarah G Teerthan of S7 CSE. Project guide is Ms. Gaurishree, Assistant Professor, CSED.

### **10. AT internship 2024 (separate file available), 1 to 12 July 2024**

The Assistive Technology Group of Mar Baselios College of Engineering and Technology (MBCET) in association with IEEE EMBS Kerala Section, organized an internship for students of MBCET and IEEE EMBS students from colleges across Kerala. During the internship, students were involved in understanding how technology can be used to enhance the lives of differently-abled persons. It comprised the following sessions, (each of which are entered as separate events, due to the effort involved.): Talk session on: "A Fresh Start: Exploring a New World.", Talk Session on: Chess Software For Blind, Talk session on: Assistive Technology-An Overview, Talk session on: Robotics In Assistive Technology, Field Visit To NISH, Demo Session on Alert System Using Vibrotactile Technology for Hearing Impaired, Field Visit to SCTIMST, Demo Session on Smart Air Quality Monitoring and Sleep Apnea Detection, Talk Session on Technology Interventions In Speech Therapy, Hands on Session on Iot For Home Automation – Part I, Field Visit to Pallium India, Talk Session on "Untold Story Of Fighting Arthritis" by Ms. Simla Balasubramaniyan, Field Visit to Vocational Rehabilitation Centre for Handicapped, Hands on Session on Iot For Home Automation – Part II, Hands on Session on Iot For Healthcare Monitoring and Project Idea Evaluation. Faculty coordinators: Dr. Alice Thomas, Assistant Professor, CED, Mr. Aswin RB, Assistant Professor, EEE. Student Coordinators: Ms. Sandra SR, S6 EEE, Mr. Adlu Rahman, S6 CSE.



The valedictory session conducted on 12th July started off with a prayer song by Dr. Alice Thomas (Assistant. Prof., Dept. of CE) followed by the welcome address. Principal - Dr. S. Viswanatha Rao, , Dr. M.J. Jayashree - Head, AT Group & IQAC Coordinator and Ms. Simla Balsubramaniyan ,MBCET Alumnus , addressed the gathering, and awarded the certificates to the participants. Participants shared their feedback, and Ms. Sanjana D.S (Second year student, CSE) presented a brief report of the internship and Mr. Aswin R B (Assistant Prof., Dept. of EEE) concluded the internship program, by proposing the vote of thanks.

## July 2023 - June 2024

### 1. Project on 'ALERT SYSTEM USING VIBROTACTILE TECHNOLOGY FOR HEARING IMPAIRED', guided by Dr. M. J. Jayashree, Professor, ECED, March 2024

S8 ECE students Ananya Prasad, Carina Miriam Sedric, Gowri Krishnan L, Parvathy A and Varsha S R were involved in the project.

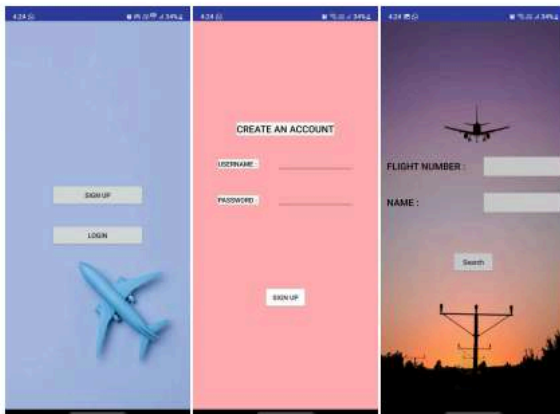
NISH Visits on November 29, 2023, March 22, 2024, and 17 April, 2024.



### RESULT OF FINAL PRODUCT



### RESULT OF FINAL APP



The implementation of vibrotactile technology in airports addresses the critical challenge faced by the hearing impaired in receiving sudden and important announcements. This advanced system utilizes

tactile communication through vibrations, offering an effective alternative to auditory information. The vibrations, applied transversely or normally to the skin, provide clear and immediate sensory feedback.

On November 29, 2023, the team made their first visit to the National Institute of Speech and Hearing (NISH) to discuss the initial concept and gather valuable feedback from experts and potential users. This visit marked a significant milestone in ensuring the product was tailored to meet the specific needs of individuals with hearing impairments. Following this, the product was presented to the NISH authorities on March 22, 2024, showcasing its capabilities and the benefits it offers to the hearing impaired and also to ask for more suggestions from them that can be added to the product. Lastly, they visited NISH on 17 April, 2024 with their final product and showed it to 7 potential users and got their feedbacks and made them rate the product on different performance factors out of 5. And the performance factors were user experience, functionality, Reliability in which they received 4.5, 3.9, 3.5 respectively as an average and for accuracy of gate call function, they obtained 50% which was taken by calling out 48 names in which 25 names were accurate and this was affected by spelling and distance.

## 2. FDP on “Recent Trends in Healthcare and Assistive Technology” from Jan 29, 2024 to Feb 2, 2024 .

An FDP on Assistive Technology and Healthcare was organized by the Biomedical Research group, Department of Electronics and Communication Engineering, Mar Baselios College of Engineering and Technology, in association with IEEE EMBS Kerala Chapter. 21 participants attended the FDP coordinated by Dr. M. J. Jayashree and Ms. Amritha B.J. (co-coordinator). Faculty from NISH and SCTIMST were resource persons.

## 3. Discussion on ‘Deep Learning based Text-to-Speech (TTS) Model’ on 28 November 2023:



A project discussion between a team from NISH (Ms. Vineetha Sara Philip, Mr. Riyas Kharim and Dr. Priyalakshmi S) and students of MBCET S5 CS )Sam Peter, Abijith Renjith Nair, A.P Vibin, Aravind J L, Shwetha J S and Feba) was conducted on 28 November 2023.

#### **4. NSS MBCET Activity on Assistive Technology:**

As a part of International deaf week and international sign language day, NSS MBCET UNIT 230 and UNIT 706 presented an interactive session on international sign language day.

Date : 28/09/2023,

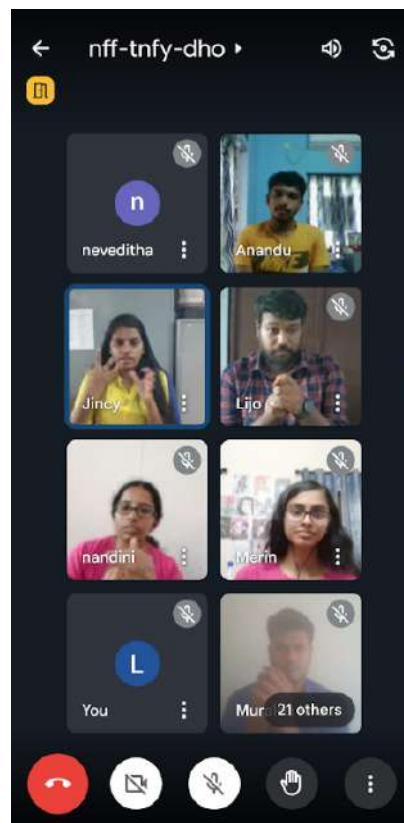
Time : 10am-11am

Google meet

Coordinators:

Anandu : 8547303973

Anand : 81389 83887



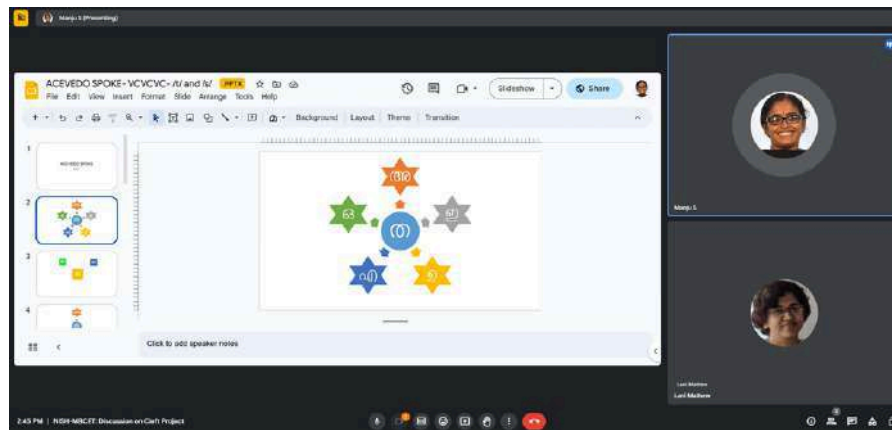
## 5. Student Buddies with NISH-IYWD:

S7 CS students, Mr. Shravan and Mr. Shubin have helped I-YwD participant Mr. Sravan Vinod build a digital platform which lies at the core of his entrepreneurial venture. Ms. Jisha Jose is the faculty coordinator. (Sep 2023 - Nov 2023)



## 6. Discussion with NISH on Cleft related project proposal

Ms. Amritha B.J. and Dr. Lani Rachel Mathew had an online discussion on a joint ICMR project proposal on cleft lip and palate on 26 July 2023 at 2:30 pm.



## 7. Blind swimmer project update

Dr. Lani Rachel Mathew, Asst. Professor, ECED, and Mr. Shyam Haridas (2019-2023 EC2) visited SCTIMST-TIMED, Poojapura, on 14 July 2023 (2:30 - 4:00 pm) to discuss possibilities of further modifications to the final year project titled, 'Development of sensor based swimming aids for the visually impaired'.



**July 2022 - June 2023**

**1. I-YwD (Innovation by Youth with Disabilities) Cohort 3 Selection Camp venue at MBCET: 12th and 13th of May 2023**

MBCET hosted the I-YwD team for the online I-YwD (Innovation by Youth with Disabilities) Cohort 3 Selection Camp on 12th and 13th of May 2023. The sessions included orientation, online activities and discussions in breakout rooms for young entrepreneurs with disabilities. Indian Sign Language (ISL) translator, Ms. Bhavana U B, helped the team to communicate in real time with persons having hearing impairment. Project coordinators, Ms. Daisy Sebastian, Ms. Sari P Vishwanath, Ms. Anjali Gopan and Mr. Avaneesh M and interns, Ms. Archa Krishnan S and Ms. Jisha M, were involved in conducting the various sessions. Prof. Raju K. Gopal and Mr. Jith from the ITMS team ensured smooth conduct of the online sessions that were held in Faraday Hall. Faculty coordinator: Dr. Lani Rachel Mathew, Asst. Professor (ECE)





## **2. Assistive Technology Internship 2023: 17 April - 28 April 2023**

Coordinators: Ms. Amritha BJ, Dr. Alice Thomas

The Assistive Technology Internship 2023, was organized by the Assistive Technology (AT) group at Mar Baselios College of Engineering and Technology (MBCET) in association with the Biomedical Research Group (Department of Electronics and Communication Engineering, MBCET), Catalyst (AICTE-sponsored club), and IEEE EMBS SBC MBCET, from 17<sup>th</sup> – 28<sup>th</sup> of April 2023. The program was sponsored by the AICTE SPICES Sponsored Club. A total of 21 students (17 students from the department of ECE and 4 from the department of CSE), successfully completed the internship program.

Faculty coordinators: **Ms. Amritha B.J.**, Assistant Professor, Dept. of ECE, and **Dr. Alice Thomas**, Assistant Professor, Dept. of CE mentored by **Dr. M.J. Jayashree** (Head, Assistive Technology Group | IQAC Coordinator, MBCET) and **Dr. Lani Rachel Mathew** (Faculty Advisor, IEEE EMBS Student Branch Chapter)





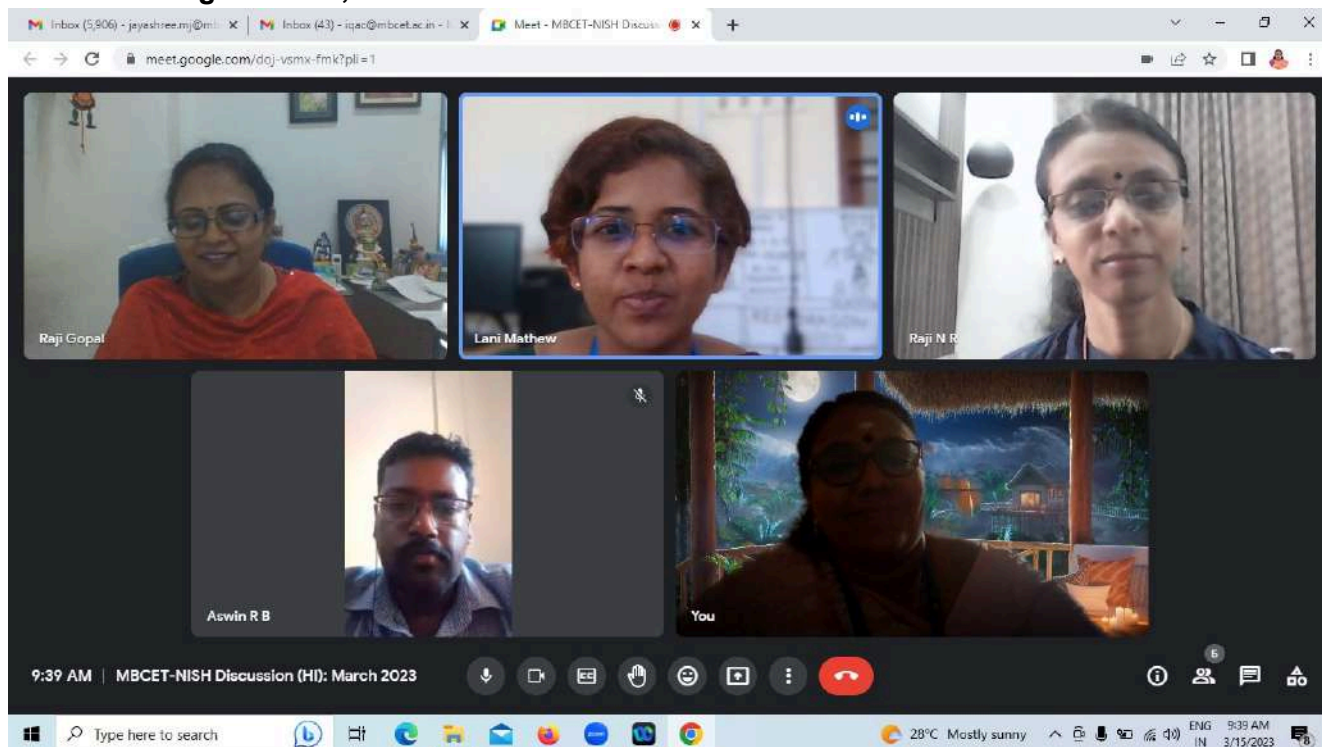
### 3. Visit to NISH

Dr. Shalu George K., Associate Professor, EED and Ms. Soumya A V., Assistant Professor, EED, along with a group of students of S8 EE visited the National Institute of Speech and Hearing (NISH) on 01 March 2023, as part of the discussion of their project entitled “Smart Ergonomic Office Chair”.

27 March 2023: Students visited and discussed their project with Mr. Amith of NISH.

Link: <https://forms.gle/9xWcXEEzoy7puW9u7>

### 4. Online meeting with DHI, NISH



Ms. Raji Gopal, Coordinator-Degree(HI) & Faculty-HEFP, and Ms. Raji NR, In-charge, Computer Science, NISH, joined the call. From MBCET, Dr. M.J.Jayashree (ECE), Dr. Lani Mathew (ECE)

and Ms. Jisha Jose (CSE) and Mr. Aswin RB (EEE) joined. They discussed various possibilities of collaboration between MBCET and NISH-DHI (Degree-Hearing Impaired), with respect to joint projects, faculty exchange programs, etc.

NISH offers a four year BSc Computer Science (HI) program under the Kerala University. The 1st year is a foundation course covering basics of English language, Mathematics, soft skills, etc., followed by the 3 year BSc.CS(HI) course. They will share the syllabus of the BSc.CS(HI) program. A tentative plan may be sent from both sides after internal discussions based on the academic calendars, so that mutually feasible dates may be decided upon. They also mentioned that before any collaborative program, a Sensitization program involving ice-breaking sessions and ISL (Indian Sign Language) classes, would be needed to break communication barriers between students with and without hearing impairment. The meeting ended at 9:45 am.

#### **5. Mentor Sensitization Program: I-YwD Cohort at NISH**



The following faculty members from MBCET attended the session on 24 February 2023: Ms. Amritha B. J. (ECE), Dr Alice Thomas (CED), Ms. Soumya A. V. (EEE), Dr. Nidhi M. B. (MED), Dr. Shalu George K. (EEE)

Morning session started with experiencing the blind where some of us could experience using a white cane blindfolded. Tiffany Brar ma'am, Balaraman Sir along with their other two team members shared their experiences and all. The participants realized that nothing is impossible for them, be it playing chess or using a smart phone, etc.

This was followed by a session with the deaf students in the institute, where faculty members could interact with them, and later on played some games using sign language. The program

concluded with an experience sharing session by Ashla ma'am of Palliative India, a wheelchair user.

## 6. Delegation to TCS

Dr. Lani Rachel Mathew, Asst. Professor, ECED, was part of the delegation from APJAKTU to Tata Consultancy Services (TCS), Trivandrum, on 15th February 2023, to discuss possibilities of promotion of assistive technology related activities in the engineering community. Mr. Robin Tommy, TCS Trivandrum, was the organizer of the program which aimed at the promotion of Assistive Technology (AT) among the engineering community.

Date: 15 Feb 2023

Time: 11.30am

Location: TCS Delivery Centre, Technopark, Trivandrum

[https://m.facebook.com/story.php?story\\_fbid=pfbid02iS4cEuv9BHuQvPAsA11m6zKtMzQTYWGHY6VdfY7hQgmbLcgN4epjZuHEd6edU9tAl&id=100064672339209&mibextid=Nif5oz](https://m.facebook.com/story.php?story_fbid=pfbid02iS4cEuv9BHuQvPAsA11m6zKtMzQTYWGHY6VdfY7hQgmbLcgN4epjZuHEd6edU9tAl&id=100064672339209&mibextid=Nif5oz)



## 7. Inauguration of Placement drive of Acsia for differently abled engineering students:

Acsia Technologies, one of the world's leading companies specialising in automotive software, launching a placement drive of Acsia exclusively for differently abled engineering final year students across all colleges in Kerala. Their launch ceremony was held on Tuesday, January 24, 2023, at 11 :00 am at Visvesvaraya Hall in Mar Baselios College of Engineering & Technology. Dr. Ciza Thomas, Hon. Vice Chancellor, APJ Abdul Kalam Technological University will inaugurate the Programme in the presence of Dr. Suja K. Kunnath, Principal, Academic Programs, National Institute of Speech & Hearing and Dr. Shalij P. R. - Dean Research, APJ Abdul Kalam Technological University.

Coordinator: Ms. Soumya AV , Asst. Professor, EEE





#### 8. Assistive Technology Conclave

Mr. Arun JS and Dr. Lani Rachel Mathew (Asst. Professors, ECED) attended the Assistive technology Conclave at the NISH campus on 31<sup>st</sup> August 2022. The conclave aimed at

promoting Assistive Technology engagement among students and faculty from diverse fields.



#### **9. MoU with National Institute of Speech and Hearing under the scheme Innovation by Youth with Disabilities (I-YwD)**

The College has signed an MoU with National Institute of Speech and Hearing under the scheme Innovation by Youth with Disabilities (I-YwD) on 25 July 2022. MBCET is one of the 15 colleges selected for the scheme which was jointly mooted by NISH and APJ Abdul Kalam Technological University and supported by KDISC.



#### **10. Program Committee: Empower 2022**

Dr. Lani Rachel Mathew has been included in the Program Committee of Empower 2022 wef 1st April 2022. The conference will be conducted in IIT Madras Research Park from October 13-15

**July 2021 - June 2022**

**1. MBCET-AT group meeting**

Mon Oct 27, 2021 9:30am - 10am (IST)

Discussed the project ideas that could be taken up by different departments as project topics are being finalized across departments now. This year's AT Internship will be conducted with Ms. Amritha and Mr. Jomy as the coordinators. Some of the smaller problems listed out in the previous meeting may be taken up during the AT internship. 2nd and 3rd year engineering students are the target audience.

**2. NISH-MBCET Project Ideas meeting**

Meet Link: [meet.google.com/puj-rgvb-jnt](https://meet.google.com/puj-rgvb-jnt)

An online discussion with experts from National Institute of Speech and Hearing (NISH), to collect possible project ideas for S7 students, was held on Oct 18, 2021. Dr. Akila S., Senior Engineer (CATI) and Mr. Kshitij Singh gave suggestions for projects. Dr. M. J. Jayashree, Ms. Lani Rachel Mathew and Ms. Amritha B.J. attended the discussion.

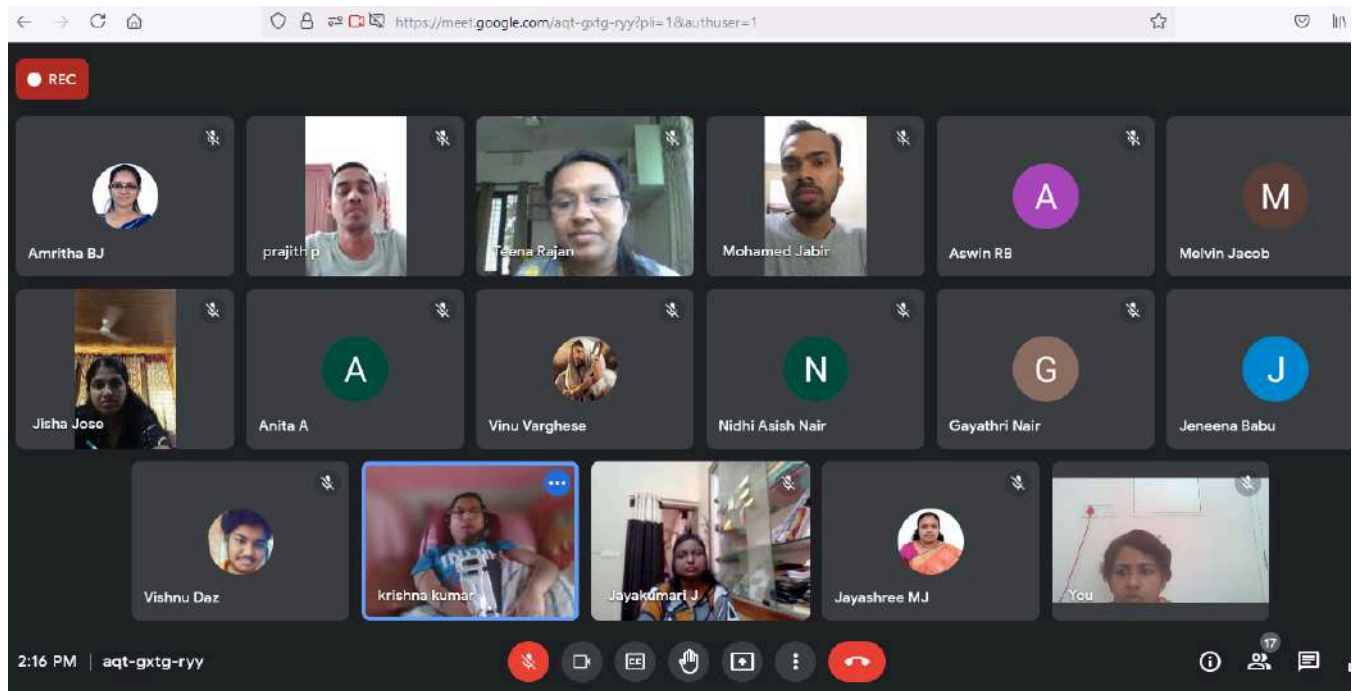
**3. NISH CATI – MBCET meeting (16 Sep 2021)**

Meet Link: [meet.google.com/kvw-yvhc-nes](https://meet.google.com/kvw-yvhc-nes)

An online discussion with Dr. Akila S., Senior Engineer (CATI) and Mr. Kshitij Singh to discuss the joint FDP to be organized for the year 2021-2022, was conducted on 16 September 2021 from 10am – 11am. Dr. M. J. Jayashree, Ms. Lani Rachel Mathew and Ms. Amritha B.J. attended the discussion.



#### 4. AT Meeting to discuss MIND (Mobility in Dystrophy)



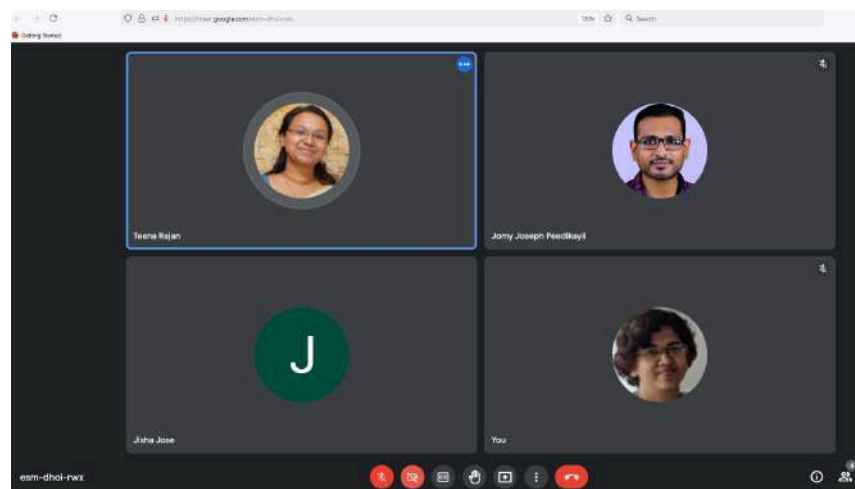
Meeting with MIND

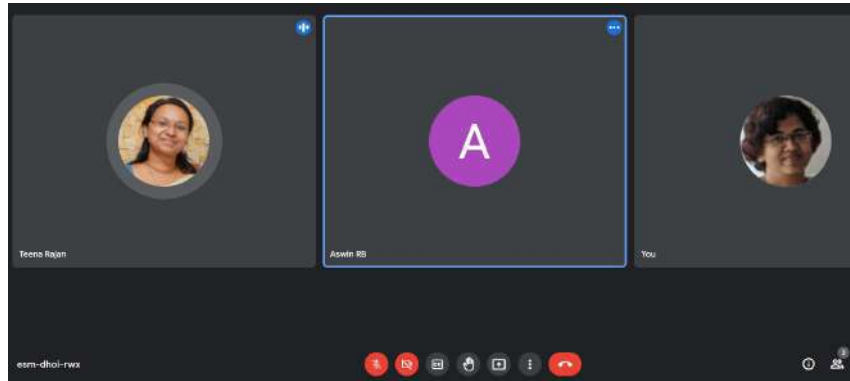
Thursday, July 8 · 2pm

Google Meet joining info

Video call link: <https://meet.google.com/aqt-gxtg-ryy>

**Follow up meetings:**





<https://meet.google.com/esm-dhoi-rwx>

Date: 7th July 2021, Time: 2:00 pm to 2:20 pm.

Ms. Teena Rajan briefed about the MIND internship program.

### **24/07/21:**

മൈൻഡിലെ മൂന്ന് അംഗങ്ങളായ വൈശാഖ്, ദീപ, അരുൺ എന്നിവർക്ക് വിൽചെയറുകൾ സമ്മാനിച്ച തിരുവനന്തപുരം മാർ ബസേലിയോസ് കോളേജ് ഓഫ് എഞ്ചിനീയറിംഗ് ആൻഡ് ടെക്നോളജി ഡിപ്പാർട്ട്മെന്റിലെ എല്ലാ നല്ല മനസ്സിനടമകൾക്കും മൈൻഡ് ട്രസ്റ്റിന്റെ ഒത്തിരി സ്നേഹം.

ഇലക്ട്രോണിക്സ് ആൻഡ് കമ്പ്യൂട്ടറേഷൻ ഡിപ്പാർട്ട്മെന്റിലെ ടീന രാജൻ മാടത്തിന് മൈൻഡ് ട്രസ്റ്റിന്റെ പ്രത്യേക സ്നേഹവും അറിയിക്കുന്നു.

<https://www.facebook.com/1065911153539424/posts/2369235966540263/?d=n>

## **5. SPACE HACK - student project on Space Technology for All**

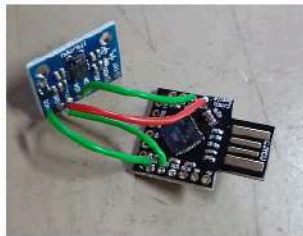
- July 2021
- Students (Mr. Aswen and team) are planning to make their space technology app inclusive for all. As a first step, they are collecting feedback from hearing impaired students of NISH. Questions are being framed according to guidelines given by Ms. Raji Gopal of NISH. The following students were involved in the support for sign language interpretation of each of the questions in the market survey of the project:
  - Sign language Interpretation - Jincy Mariam Jacob (NISH)
  - Voice over: Sreelakshmi C S (NISH)

## **6. Head Mouse Project at NISH**

15 july 2021: Work done at MBCET: The following students were involved in an assistive technology project in NISH, related to the control of a mouse with head movements.

Sidharth Nair S8 ME2  
 Pratyush Moni S J S8 Me2  
 Aparna sreekumar S8 CS2

Devika M M S8 EE2  
Arya P K S8 EE2  
Vishnu P Kumar S8 EC2  
K Vaibhav S8 EC2  
Vaishnavy Menon S8 CS2



**July 2020 - June 2021**

### **1. NISH CATI – MBCET meeting (1 June 2021)**

- Meet Link: [meet.google.com/xhw-hrzo-jgt](https://meet.google.com/xhw-hrzo-jgt)
- An online discussion with Dr. Akila S., Senior Engineer (CATI) and Mr. Kshitij Singh to discuss a possible joint FDP to be organized for the year 2021-2022, was conducted on 1 June 2021 September 2021 from 11:30 am to 12:00 pm. Dr. M. J. Jayashree, Ms. Lani Rachel Mathew, Ms. Hema P.P., Mr. Aswin R.B., Mr. Jomy Joseph, Ms. Teena Rajan and Ms. Amritha B.J. attended the discussion.

### **2. Alert Project at NISH**

- A team of 8 students (Aparna Sreekumar and Vaishnavy Menon (S6 CS2) , Vaibhav K. and Vishnu P. Kumar (S6 EC2), Arya P.K. and Devika M.M. (S6 EE2), Pratyush Moni S. and Sidharth Nair (S6 ME2) ) from MBCET under the mentorship of Mr. Amith G. Nair, Hardware Engineer at NISH, started off on 10th April 2021, with the project work on implementing an alert device for the hearing impaired, to be used inside the library and that can be controlled using a phone. They have built a working model of the same, and passed it on to NISH for testing.





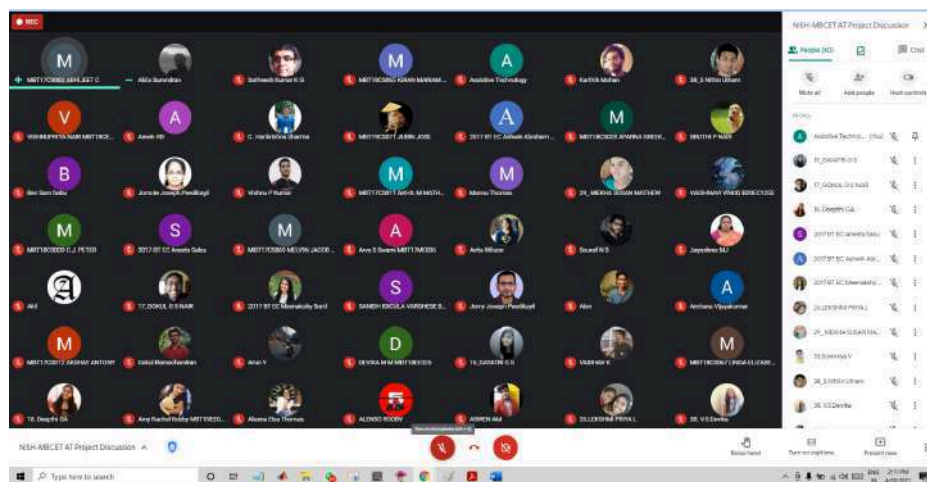
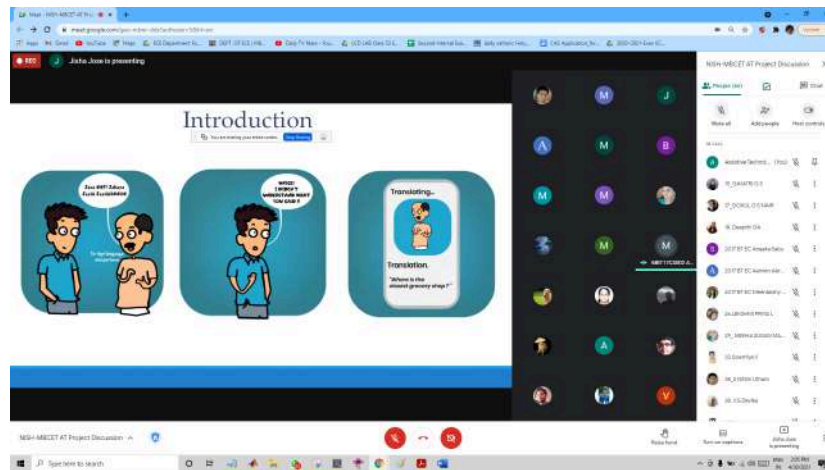
### **3. Joint project with NISH on 'Speech therapy system for children with cleft lip and/or palate':**

NISH Review Authority for Review (RAR) has granted approval, on 30th April 2021, for the student project by Ms. Deepthi G. A., Ms. Aneeta Sabu, Ms. Sowmiya V. , Ms. V. S. Devika under the supervision of Ms. Lani Rachel Mathew and Ms. Amritha B.J. The project is done with inputs from Ms. Manju S. of NISH.

### **4. NISH-MBCET AT Project Discussion on April 30, 2021**

An online discussion with experts from National Institute of Speech and Hearing (NISH), on the ongoing Assistive Technology (AT) projects in the college, was held on 30th April 2021. Prof (Dr.) K. G. Satheesh Kumar, Director, Centre for Assistive Technology and Innovation (CATI), NISH and Dr. Akila S., Senior Engineer (CATI) gave suggestions for improvement and appreciated the progress in the projects. Ten projects from across the college were presented before a virtual audience of more than 60 participants.

**Coordinator:** Ms. Jisha Jose (Asst. Professor, Dept. of Computer Science Engineering)



## 5. Faculty visit to NISH on 25 March 2021

Faculty members from the Assistive Technology group at MBCET (Dr. M.J. Jayashree, Mr. Aswin R.B., Ms. P.P. Hema, Mr. Jijo Jose and Ms. Amritha B.J.) visited the National Institute of Speech and Hearing (NISH) on 25 March 2021, to discuss the projects related to Assistive Technology that can be implemented in collaboration with NISH.



**6. AT Internship 2019 intern - update**

Ms. Aleena Elsa Thomas of S6 CS, intern at MBCET Assistive Technology Internship 2019, and Student Mentor of MBCET Assistive Technology Internship 2020, enrolled for and successfully completed two diploma courses in Learning Disabilities and Special Needs Education offered by British Learning, London. Congratulations, Aleena!







## 7. AT Internship 2020

The AT internship 2020 was conducted online from 3rd August 2020 to 14th August 2020. 104 students successfully completed the internship and were awarded certificates.

### 2020 Assistive Technology Internship - Invited Talks - Google Meet Videos

1. <https://youtu.be/fDSiMfJ1ymo> - Invited Talk on 3rd August 2020 by Dr. Satheesh K. G., Director, CATI, NISH on the topic 'An Engineer's Perspective on Disability and Assistive Technology'
2. <https://youtu.be/U7H9FCbmaUQ> - Invited Talk on 5th August 2020 by Ms. Manna M. Leghu, R&D Psychologist, Embright Infotech, on the topic 'Understanding Assistive Technology - Significance, Trends & Applications'
3. <https://youtu.be/9vzZuIRVT1E> - Invited Talk on 6th Aug 2020 by Mr. P. Balaraman, Blind Chess Champion and Access Technology Trainer, Jyothirgamaya Foundation on the topic 'Accessibility: Challenges and Perspectives'
4. [https://youtu.be/7qsKow\\_NQ7A](https://youtu.be/7qsKow_NQ7A) - Invited Talk on 10th Aug 2020 by Dr. Suja K. Kunnath, NISH, on the topic, 'Autism Spectrum: Can Technology make a positive impact?'
5. <https://youtu.be/PprBM2zinDs> - Invited Talk on 12th August 2020 by Mr. Sanju Mathew, CEO, Codeofduy, on the topic 'Building Bionics'



July 2015 - June 2020

### 1. Visit to NISH AT devices Display

Assistive technology Assessment Camp and devices Display was carried out by NISH on 6<sup>th</sup> February 2020. 15 students from MBCET accompanied by faculty members Ms. Joemole Joseph and Ms.P.P Hema attended the programme.



## **2. Visit to Kanthari, Vellayani**

Five Students from ECE and Nature club members visited Kanthari on 21<sup>st</sup> December 2019 and met Ms. Sabriye Tenberken. They also discussed about the project "Assistive Technology for Blind Swimmers " They were accompanied by faculty Ms. Lani Rachel Mathew.



### **3. Project Presentation at NISH**

The various projects related to Assistive technology was presented in NISH on 26<sup>th</sup> November 2019. The students got valuable suggestions from the faculties of NISH. 17 students from MBCET were accompanied by faculty members : Dr. Shalu George, Ms.Manju Sreekumar, Ms. Joemole Joseph, Ms. Lani Rachel Mathew, Ms.P.P.Hema. Dr. Akila S. and Ms. Manju S. shared their views on the project design.





**Project 1: Location Tracking for Blind Swimmers**

Guide: Ms. Hema P. P.

Students: Ms. Aparna Padman, Ms. Jisha D. Saiju, Ms. Prabitha Prasad, Ms. Sheethu Gopal

**Project 2: Electrolaryngeal Speech Enhancement**

Guide: Ms. Lani Rachel Mathew

Students: Ms. B. S. Shreelekshmi, Ms. Jubily V Reji, Ms. Nandana R, Ms. Nissie Mary Johnson

**Project 3: Smart Glove**

Guide: Ms. Manju Sreekumar

Students: Ms. Anakha L. V., Ms. Lavina Vijay, Ms. Parvathy Ajayan, Ms. Souparnika V. M.

**Project 4: Tongue Motion Detector Wheelchair**

Guide: Dr. Shalu George K.

Students: Ms. Adithya S. Kumar, Ms. Anulekshmi A. S., Ms. Aparna K. P. Srikanth, Ms. Bhavana Suresh

#### 4. Accolades of Students from Assistive technology Group

- o **Deepthi G.A, Athul Raj A. , Gokul G.S.,Navaneeth Krishnan** secured second prize for the topic “Track Follower for Blind Long Jumpers” in Idea presentation event hosted by NEXUZ on 11<sup>th</sup> and 12<sup>th</sup> October 2019 at MBCET.
- o **Vishnu P Kumar** won the first prize for the project “Chess Board for the blind” in the project presentation event hosted by NEXUZ on 11<sup>th</sup> and 12<sup>th</sup> October 2019 at MBCET.



#### 5. MoU signed between MBCET and NISH

Date: 15th February 2019



## 6. CASHI (Connected Announcement System for Hearing Impaired) project successfully installed in a computer lab at NISH

Date: 25th January 2019

Connected Announcement System for Hearing Impaired (CASHI): Funding (Rs. 9000/-) for LED boards for one classroom released from NISH.

Students: Pranav Peter, Joel Raju (S5 EC1)

Faculty in charge: Ms. Hema P. P., Lani Rachel Mathew



## **7. Final Demo of Speech Analyzer: 27th March 2018**

Students: Krishnendu Lalaji, Pooja G. S., Rahul Krishnan K. S. (S8 EC2)

Results presented at Empower 2018 (25 – 27 October 2018) – Conference on Assistive Technology organized by IIT Delhi

## **8. Internship at NISH: July 2017**

Our first MBCET interns at NISH: Ms. Greeshma Susan John and Mr. Neeraj S. (S7 EEE) and Ms. Amitha Baby (S7 ECE)

## **9. Oct 14, 2017: NISH Day 2017**

Staff who attended: Ms. Jomole Joseph, Ms. Lani Rachel Mathew

**10. November 10, 2017: Meeting at NISH** with staff and students of S7 and S5 ECE and EEE to discuss projects and interact with deaf students

## **11. Project Demonstrations:**

### **Vocal Tract Resonance Measurement**

Student members (S7 ECE): Nilu Anna George, Rohit S., S. Selva Ganam, Vamsee Krishnan S.

Faculty: Lani Rachel Mathew

April 11, 2017: Research Proposal submitted

Vocal Tract Resonance Measurement Demo: May 12, 2017





### **Fundamental Frequency Estimation using Praat**

Student members (S7 ECE): Krishnendu Lalaji, Pooja G. S., Rahul Krishnan K. S.

Faculty: Lani Rachel Mathew

April 11, 2017: Research Proposal submitted

Fundamental Frequency Estimation Demo: September 18, 2017



**12. May 4, 2017: Meeting at NISH from MBCET**

## **Members from NISH**

Dr. Samuel N. Mathew, Executive Director, NISH, Dr. K. G. Satheesh Kumar, Director, Centre for Assistive Technology and Innovation (CATI), Dr. Akila Surendran, Senior Engineer (CATI)

## **Members from MBCET**

Dr. T. M. George, Principal, MBCET, Dr. M. J. Jayashree, HoD, ECE, Ms. Lani Rachel Mathew, Asst. Prof., ECE, Ms. Jomole Joseph, Asst. Prof., EEE, Ms. Anne Dixon, Asst. Prof., CSE

### **13. January 12, 2017: Talk on 'Technological advances in neuroscience, hearing and voice'**

Dr. Suja Kunnath and Ms. Manju S.

STTP on Image and Speech Processing with Practical Applications (ISPPA'17), MBCET

**14. August 2015 – Dec 2016:** Joint study of use of digital signal processing in Voice evaluation, Internal Research proposal

### **15. July 24, 2015 – First meeting at NISH**

Dr. Suja Kunnath, Head, Dept. of Neurodevelopmental Sciences, NISH

Ms. Manju Subrahmanyam, Head, Clinical Coordinator, NISH

Ms. Lani Rachel Mathew, Asst. Prof, ECE, MBCET

**16. First communication with NISH:** Dr. K. N. Pavithran, the first Executive Director of NISH, contacted by Dr. Sakuntala S. Pillai, former Dean (R&D), MBCET in July 2015, introduced us to Dr. Suja Kunnath of NISH.