

**Mar Baselios College of Engineering and Technology (Autonomous)**  
**ASSISTIVE TECHNOLOGY GROUP REPORT**

**July 2024 - June 2025**

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

The Assistive Technology Internship 2025 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/DLB2QHHBLBe/?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=MWQ0OGdreHRlcjZsMA==](https://www.instagram.com/p/DLSIS1_yjZ1/?img_index=1&igsh=MWQ0OGdreHRlcjZsMA==)

## 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

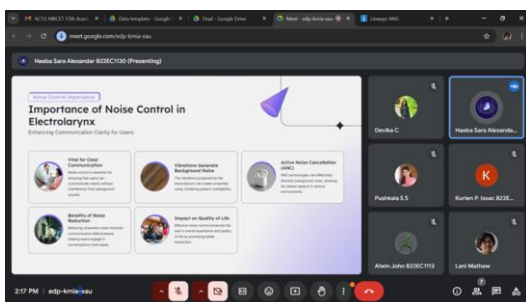
Reminder: Online Presentation for Assistive Technology (AT) Project Proposals

 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**



### 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

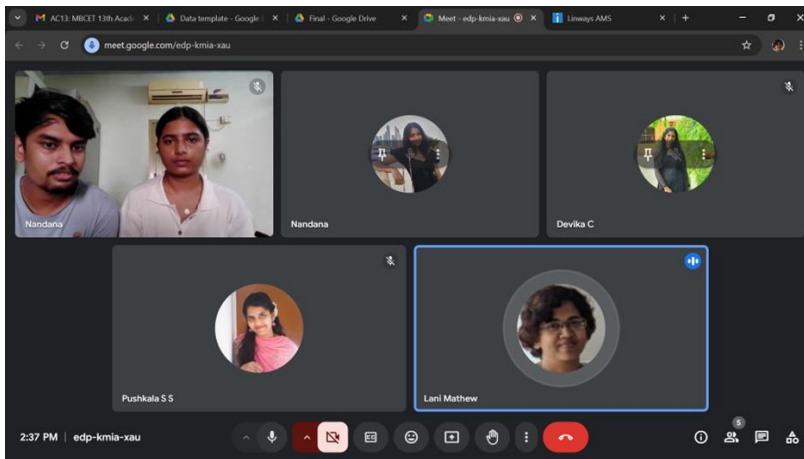
Topic: Door Automation

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



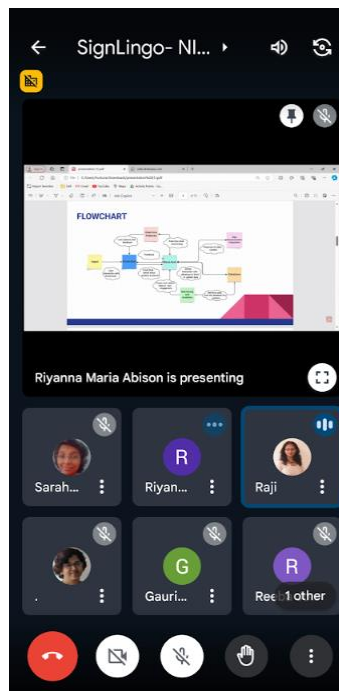
As a follow up activity of the AT internship, IEEE EMBS MBCEET invited students to submit Assistive Technology (AT) project proposals to develop devices and tech interventions for the differently abled and aged. Important Dates: Extended Abstract Submission Deadline: October 14, 2024 o Details: Topic,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