

MELAKA
INTERNATIONAL
INTELLECTUAL EXPOSITION

MIIEX'24

12 JUNE '24

Dewan Taming Sari,
Universiti Teknologi MARA Caw. Melaka,
Kampus Alor Gajah, Melaka

*"Empowerment of Special
Needs through Invention
& Innovation"*

**EXTENDED
ABSTRACT**

MiiEX'2024

MELAKA INTERNATIONAL INTELLECTUAL EXPOSITION 2024

**“EMPOWERMENT OF SPECIAL NEEDS THROUGH INVENTION AND
INNOVATION”**

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UiTM Cawangan Melaka

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78000 Alor Gajah

Melaka Bandaraya Bersejarah

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MiiEX'2024

MELAKA INTERNATIONAL INTELLECTUAL EXPOSITION 2024

“EMPOWERMENT OF SPECIAL NEEDS THROUGH INVENTION AND
INNOVATION”

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INNOVATION, INVENTION, AND DESIGN

FOREWORD BY THE RECTOR OF UiTM CAWANGAN MELAKA



Professor Ts. Dr. Mohd Rasdi bin Zaidi

Rector, Universiti Teknologi MARA (UiTM)

Cawangan Melaka

Welcome to the Melaka International Intellectual Exposition 2024 (MIIEX '24). It is an honour for me, on behalf of UiTM Cawangan Melaka, to thank all of you for joining MIIEX '24. We are proud to inform you that this is the 13th consecutive year that UiTM Cawangan Melaka is organizing this exposition. Since 2009, UiTM Cawangan Melaka has successfully hosted this innovation exposition. Not only have we succeeded in organizing the exposition, but we have also successfully embarked on commercialized products.

2024 is a special year where MIIEX 2024 emphasizes the development of special needs. As we know, special needs indicate a limitation in a person's ability to engage in and benefit from various aspects, such as daily activities and education. Hence, with the theme "Empowering Special Needs Through Invention and Innovation," it is a platform for industries, professionals, academicians, students, and communities to share their innovative ideas and products to increase accessibility for those with special needs.

The successful implementation of MIIEX '24 is our joint success. This event was supported by the Melaka state government through YB Datuk Fairul Nizam bin Roslan, the EXCO of Science, Technology, Innovation, and Digital Communication. I also want to express my

gratitude to Universitas Negeri Padang, Indonesia, Universitas Muhammadiyah, Makassar, Indonesia, the International Association of Economic and Businesses (IAEB), Universiti Sains Islam Malaysia, Ibnu Umami Maktum Research Center (UMMI), USIM, and The Southeast Asia Minister of Education Organization Regional Centre for Special Educational Needs (SEAMEO SEN) as our co-collaborators for MIIEX 2024.

The collaboration from various parties in MIIEX '24 is a platform that will improve cooperation and interweaving among industries, professionals, academicians, students, and communities in shaping their potential in developing innovation products. This exposition also serves as a platform to cultivate and uphold the nation's innovation culture by presenting new ideas and research by young people, especially from academia and universities. Indirectly, MIIEX '24 will encourage all inventors towards empowering Science, Technology, Engineering, and Mathematics (STEM), especially in primary and secondary schools.

The new digital landscape also inspires more innovation and new ideas that contribute to various activities, such as business and industries. As a university that encourages "Research and Innovation," we aim to foster more innovative products that benefit scholars, industries, and communities, addressing issues to improve our present and future life.

This exposition would never happen without dedication, teamwork, and commitment. A round of applause should be given to the committee teams, who are the backbone of this exposition. Their hard work, effort, and time made this exposition possible.

Finally, I would like to conclude this brief remark by thanking all the participants and stakeholders for joining the exposition. We hope that this collaboration never ends here.

Thank you.

FOREWORD BY THE DEPUTY RECTOR (RESEARCH & INDUSTRIAL LINKAGES)



Associate Professor. Dr. Nur Hayati binti Abd Rahman

Deputy Rector (Research & Industrial Linkages), Universiti Teknologi MARA (UiTM) Cawangan Melaka

With much passion and privilege, let me warmly welcome all of you to the Melaka International Innovation Exhibition (MIIEEX), UiTM Cawangan Melaka's flagship event. I firmly believe that events such as these demonstrate the gradual evolution of this platform in terms of its significance and its governing principles within the sphere of learning and the broader scholarly society.

The theme for this year, "Empowering Special Needs Through Invention and Innovation," strongly connects to our mission of using research and technology to make a positive impact on the world we live in. Besides enforcing the message of diversity, this theme also reaffirms our focus on creating products to improve the lives of people with disabilities (PWDs). Such innovations are vital as only through focused constructive changes can society become more sensitive to the needs of all members.

MIIEEX allows researchers, students, and industry professionals to come together, share their innovative research, and develop viable research partnerships. It has been great to see the enthusiasm of the participants and the efforts they put into their projects, which can offer various social and economic benefits. This is why one can state that MIIEEX is a great

opportunity for creating connections between the academic environment and industry, facilitating the implementation of innovative and promising projects.

Finally, I would like to express my sincere appreciation to all the members and supporters of the organizing committee, all the participants, sponsors, and everyone involved in preparing this event. I want to express my gratitude for your commitment and involvement, as the success of MIIEX and the development of an active culture of innovation in our university and beyond is partly owed to your support.

Thank you

FOREWORD BY THE PROJECT DIRECTOR



Dr Zulkefli bin Muhamad Hanapiyah

Senior Lecturer

Assalamualaikum and Warmest Greetings,

It gives me a great pleasure, on behalf of the organizing committee, to welcome all participants and speakers to the Melaka International Intellectual Exposition 2024 (MIIEX '24) with the theme "Empowering Special Needs Through Invention and Innovation." We are honoured and pleased to welcome all participants to this biennial event.

MIIEX '24 is a platform that gathers experts from local and international industries, academia, scientists, researchers, and the community to contribute to the advancement of scientific and technological knowledge. This knowledge helps develop disruptive innovation products that improve daily activities for businesses and the community, especially those with special needs.

MIIEX '24 provides an atmosphere for inventors of all levels to gain new exposure and collaborate. Indirectly, this promotes a collaborative and innovative culture that focuses on cutting-edge technologies and new standards in technology and creativity.

MIIEX '24 is anticipated to serve as an arena for participants to acquire and disseminate revolutionary information on ideas and innovation. It is intended that the competition will expose the contestants' minds to the latest technologies and designs, aligning with the government's goal of encouraging innovation in Malaysia.

Finally, I want to compliment my fellow committee members on their amazing efforts, which were vital to the event's success. In addition, I want to thank our co-organizers, event sponsors, and participants. Optimistically, we hope that all new knowledge discovered, invented, or innovated will lead us toward future sustainability.

Thank you.

**FOREWORD BY MELAKA STATE EXCO OF SCIENCE, TECHNOLOGY,
INNOVATION AND DIGITAL COMMUNICATIONS**



YB Datuk Fairul Nizam bin Roslan

Melaka State Exco of Science, Technology, Innovation and Digital Communications

Welcome to the Melaka International Intellectual Exposition 2024 (MIIEX '24). It is an honor for me, on behalf of UiTM Cawangan Melaka, to thank all of you for joining MIIEX '24. We are proud to inform you that this is the 13th consecutive year that UiTM Cawangan Melaka is organizing this exposition. Since 2009, UiTM Cawangan Melaka has successfully hosted this innovation exposition. Not only have we succeeded in organizing the exposition, but we have also successfully embarked on commercialized products.

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Finally, I would like to conclude this brief remark by thanking all the participants and stakeholders for joining the exposition. We hope that this collaboration never ends here.

Thank you.

MIIEX'24 ORGANISING COMMITTEE

COMMITTEE	NAME
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	BUSHRA ABDUL HALIM
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	FAIQA HAFIDZAH BINTI HALIM
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	AFZAN SAHILLA BINTI MOHD AMIR HAMZAH
	MUHAMMAD FURQAN BIN AZHAR
	KHAIRUL AZHAR BIN LOCHMAN

ABOUT MIIEX'24

MIIEX'24 is an innovation competition annually organised by UiTM Melaka with the intention to bring together ideas and inspiration that could fit in for commercialization needs.

This event creates a platform for researchers to establish networking, partnership and opportunities to collaborate with industries.

OBJECTIVES

1. Encourage and instil passion towards inventing and innovating among UiTM Cawangan Melaka staff, students and academicians of local and international higher education institutions;
2. Highlight distinguished talents of skilful inventors and exhibit intellectual products, inventions and innovations among local and private tertiary institutions, government and private agencies, including international participants;
3. Become an effective Business Matching platform for participating research products, matching industries and partnering government agencies;
4. Recognise, inspire and promote invention and innovation products to be patented and commercialized;
5. Increase passion towards inventing and innovating through research and boost interests of government and non-government agencies to obtain consultancy services from a line up experts of higher education institutions and UiTM Cawangan Melaka.

THEME

'EMPOWERMENT OF SPECIAL NEEDS THROUGH INVENTION AND INNOVATION'

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EarSense: Enhancing Communication for the Deaf through Real-Time Translation

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Abstract

"EarSense" is a groundbreaking application designed to bridge communication gaps between the deaf and non-deaf communities. This innovative tool offers dual translation functionalities, converting sign language into spoken language and vice versa, directly through the app. Unlike conventional tools that rely on pre-recorded translations, EarSense supports real-time interactions, fostering inclusivity by allowing seamless conversations between signing and non-signing individuals. This application not only facilitates mutual understanding and connection but also enhances the communication experience by employing a user-friendly interface. This interface ensures the accuracy and adaptability of translations, making modern communication technologies more accessible and inclusive. EarSense represents a significant advancement in assistive technology, promoting enhanced connectivity in diverse communication settings.

Keywords: deafness, disabled people, real-time signing translation, mobile translation application

1. INTRODUCTION

"EarSense" emerged as a pioneering solution to the communication barriers faced by the deaf community, introducing a mobile application that seamlessly translates sign language into spoken or written language. By leveraging advanced technology, EarSense aims to foster inclusivity and enhance interaction between deaf individuals and the wider society. Through its innovative features, EarSense facilitates real-time communication, promoting understanding and connection

across linguistic divides. Specifically, EarSense was developed for Malaysians as it utilized Malaysian Sign Language for the start.

2. OBJECTIVE

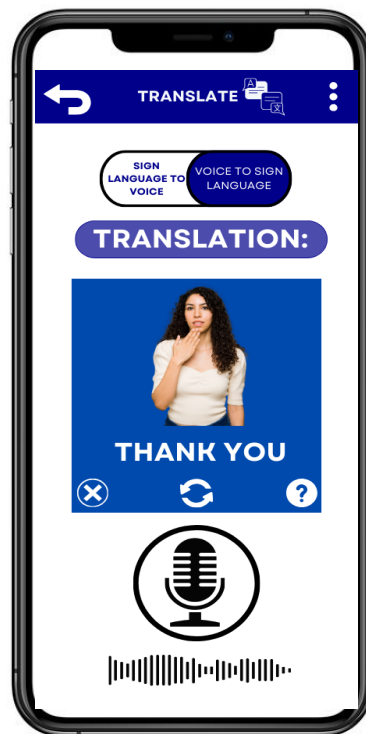
The primary objective of EarSense is to bridge the gap between sign language and spoken language, empowering deaf individuals to express themselves effectively while enabling non-signing individuals to understand and communicate with them effortlessly. By providing a platform for seamless translation, EarSense seeks to break down communication barriers and foster inclusivity in diverse social settings. Additionally, the application aims to promote accessibility and user-friendliness, ensuring that individuals of all backgrounds can benefit from its transformative capabilities.

3. NOVELTY & INVENTIVENESS

EarSense stands out for its novel approach to communication technology, combining advanced machine learning algorithms with intuitive design to revolutionize the way deaf individuals interact with the world around them. Unlike traditional translation methods, EarSense offers real-time conversion of sign language gestures into spoken or written language, providing a dynamic and immersive communication experience. Furthermore, the application's dual functionality, which allows for translation in both directions, showcases its inventiveness in addressing the needs of both deaf and non-signing individuals. By incorporating cutting-edge technology and user-centric design, EarSense sets a new standard for inclusive communication solutions.



This application uses the smartphone's camera to translate sign language to voice.



This application uses the smartphone's microphone to translate voice to sign language.

4. PRACTICALITY & USEFULNESS

EarSense's practicality and usefulness stem from its ability to facilitate seamless communication in everyday situations. Whether in social gatherings, educational settings, or professional environments, the application empowers deaf individuals to express themselves confidently and engage with others effectively. Moreover, EarSense offers practical benefits for non-signing individuals, providing them with a means to understand and communicate with the deaf community more easily. The application's customizable settings and comprehensive library of signs and phrases enhance its usability, ensuring that users can tailor their experience to suit their specific communication needs.

5. COMMERCIALIZATION POTENTIAL

The commercialization potential of EarSense is substantial, given its unique value proposition and broad market appeal. As a groundbreaking solution for inclusive communication, EarSense has the potential to attract a diverse range of users, including individuals within the deaf

community, their friends and family, educators, healthcare professionals, and businesses seeking to enhance accessibility. The application's ability to facilitate seamless communication in various social, educational, and professional settings positions it as a versatile tool with widespread commercial applications. Moreover, EarSense's customizable features and intuitive interface make it suitable for integration into existing communication platforms, further expanding its commercialization opportunities. With the growing emphasis on diversity, equity, and inclusion in both public and private sectors, EarSense is well-positioned to meet the increasing demand for innovative solutions that promote accessibility and inclusivity. Through strategic partnerships, targeted marketing efforts, and ongoing product development, EarSense can capitalize on its commercialization potential to become a leading player in the inclusive communication technology market.

6. CONCLUSION

In conclusion, EarSense represents a significant advancement in inclusive communication technology, offering a transformative solution to the challenges faced by the deaf community. By bridging the gap between sign language and spoken language, EarSense promotes understanding, fosters connection, and enhances inclusivity in diverse social contexts. With its innovative features, practical functionality, and user-centric design, EarSense sets a new standard for communication accessibility and paves the way for a more inclusive and connected society. In the future, the inventor will provide real-time translation for signing in other languages including American Sign Language and British Sign Language.

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