

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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Silent Speak Connect: Your Bridge in Better Hearing

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Abstract

The integration of hearing aids with everyday accessories like spectacles has heralded a new era in assistive technology, promising enhanced quality of life for individuals with hearing impairments. However, a critical challenge persists: the absence of a comprehensive application to seamlessly connect to spectacles hearing aids, enabling users to adjust settings, manage noise reduction, and improve overall hearing experience without physical buttons or switches. This paper proposes the development of SignSense, a mobile application designed to address these needs. SignSense integrates features such as text recognition, face detection, and sign language translation, aiming to provide a user-friendly interface for managing hearing aids and enhancing communication accessibility. Key objectives include facilitating independent living for disabled individuals and fostering inclusivity through innovative assistive technologies. The novelty of SignSense lies in its practicality and usefulness, offering significant enhancements in accessibility, safety, and communication for individuals with hearing impairments. By harnessing technology to complement hearing aids, SignSense represents a transformative step towards greater independence and inclusivity in daily life.

Keywords: Comprehensive, SignSense, User-friendly, Disability

1. INTRODUCTION

In the rapidly evolving field of assistive technology, the integration of hearing aids with everyday accessories like spectacles has opened up new possibilities for enhancing the quality of life for individuals with hearing impairments. This innovative approach combines the functionality of hearing aids with the convenience and style of spectacles, aiming to provide a seamless and unobtrusive solution to hearing loss. However, despite the advancements in technology and the growing interest in integrating hearing aids into daily life, there remains a significant problem statement that needs addressing: the lack of a comprehensive application that can connect to spectacles hearing aids, enabling users to easily adjust settings, manage noise reduction, and improve overall hearing experience and visualisation without the need for physical buttons or

switches. The development of an application that can connect to spectacles hearing aids, providing users with a user-friendly interface to manage their hearing aids and visualisation through the apps. This application would allow users to adjust settings, manage noise reduction, and improve speech intelligibility in noisy environments, all from the convenience of their smartphone or tablet.

2. OBJECTIVE

The primary objective is to implement a mobile application, SignSense, to assist visually, speech and hearing-impaired individuals in their daily activities. The application integrates features like text recognition, face detection and face recognition to enhance user experience. It also includes a sign language application for the hearing impaired and speech-to-text functionality for the speech impaired. The goal is to prove a tool that combines functionalities for different types of impairments, aiming to enable independent living for disabled individuals.

3. NOVELTY & INVENTIVENESS

This application was created to help hearing impaired persons by providing hearing aid applications that can interact with glasses and hearing aids. These applications assist hearing impaired persons in making good use of technology in their daily lives. By integrating hearing aid applications with glasses and hearing aids, it can provide a seamless and more natural experience for users. Furthermore, these applications can assist individuals simplify their lives by allowing them to communicate with others and grasp any information they encounter in public spaces. This enhances their ability to interact with others in various social settings.

4. PRACTICALITY & USEFULNESS

Individuals who wear hearing aids equipped with features integrated into applications, such as sign language capabilities and emergency SOS functions, experience a significant enhancement in accessibility and safety. The combination of hearing aids with app-based features opens up avenues for seamless communication through sign language translation, allowing wearers to engage more fully in conversations and interactions. Moreover, the inclusion of emergency SOS features provides a sense of security, enabling wearers to quickly and discreetly call for help in

urgent situations. This integration not only facilitates day-to-day communication but also ensures that wearers can navigate unexpected challenges with confidence and ease. By harnessing technology to complement hearing aids, individuals with hearing impairments gain greater independence and peace of mind in their daily lives, highlighting the transformative impact of innovative assistive technologies.

5. CONCLUSION

In conclusion, the SignSense mobile application represents a groundbreaking advancement in assistive technology, offering a comprehensive solution to individuals with hearing impairments. By seamlessly integrating features like emergency contact, text recognition, face detection, and sign language translation, SignSense enhances accessibility and independence in daily activities. Through its innovative approach, SignSense not only addresses the current limitations in hearing aid technology but also sets a new standard for inclusive and empowering assistive technologies. Therefore, it is hoped that this holistic solution empowers users to navigate the world with confidence and ease.

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