

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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	FAIQAH 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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BAid: Smart Hearing Aid Wristband

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Abstract

This paper introduces a novel smart aid hearing wristband designed specifically for deaf individuals, aimed at enhancing communication accessibility and ease of interaction in daily life. The device incorporates innovative features such as a speaker button for sound detection and connection to companion apps, enabling real-time speech-to-text conversion displayed on the user's smartphone screen. Additionally, the wristband utilizes vibration alerts customized with registered names to efficiently capture the attention of the wearer during incoming calls. The practicality and usefulness of this device are emphasized, offering a comfortable and convenient solution for daily communication challenges faced by the deaf community. Simple instructions ensure easy adoption and seamless integration into the user's lifestyle, making it an indispensable tool for enhancing communication accessibility. With its potential for commercialization, this smart aid hearing wristband represents a promising opportunity for companies to address the needs of the deaf market while also contributing to social inclusivity and technological innovation.

Keywords: Deaf, BAid, Smart, Hearing Aid, Wristband

1.0 INTRODUCTION

A world mostly created for hearing people has special difficulties for deaf individuals. They have qualities and a rich cultural identity that are frequently disregarded by society despite these obstacles. They have faced prejudice and obstacles to work and education throughout history. However, they have created lively sign languages such as ASL, which promotes communication and a strong sense of community. Technological innovations like video relay

services and cochlear implants have increased empowerment and accessibility. In order to build a more inclusive society, it is imperative to comprehend the complicated nature of deafness. In addition to the innovations in communication and cultural sensitivity, there are still significant gaps in technology for deaf individuals. These gaps include a lack of localization and cultural sensitivity in many assistive technologies, which often fail to address the diverse linguistic and cultural needs of deaf communities worldwide. Moreover, while advancements like video relay services and cochlear implants have greatly improved accessibility and empowerment, there remains a need for further innovation in areas such as real-time translation and interpretation to bridge communication barriers effectively. As technology continues to evolve, it is crucial for developers and stakeholders to prioritize inclusivity and cultural responsiveness in the design and implementation of assistive technologies, thereby fostering a more inclusive society where the diverse needs and identities of deaf individuals are fully recognized and supported.

2.0 OBJECTIVE

BAid is a smart hearing aid wristband and its aims to enhance accessibility and improve communication for individuals with hearing impairments, fostering inclusivity and independence in their daily lives. This wristband will have a vibration transmitted where it's allowing the user to assign different pattern of various sounds such as speech, doorbells or car's horn. The wristband vibration also be made to notify the user about the sound around them. It also will be connected with the user's phone so that the various sounds can appear on their phone screen trough an Apps.

3.0 NOVELTY & INVENTIVENESS

This product is distinctive because it has cutting-edge features designed with the deaf population in mind. These include customizable vibration alerts for incoming calls, seamless connectivity with companion apps on the user's smartphone, and a speaker button for sound detection and real-time speech-to-text conversion. By addressing the special demands of deaf people in a useful and approachable way, this combination of features offers a comprehensive solution for improving communication accessibility and ease of engagement in daily life.

4.0 PRACTICALITY & USEFULNESS

The smart aid hearing wristbands serve as invaluable tools for facilitating seamless daily communication for individuals with hearing impairments. User-Friendly Design is used for the wristband's ergonomic and wearable design always worries about comfort and convenience, making it suitable for constant use all day. To ensure accessibility for people with different degrees of technological ability, the device also has easy-to-learn and basic instructions. Designed with the user in mind, these wristbands offer unparalleled comfort and convenience, ensuring they can be worn effortlessly throughout the day without the fear of misplacement. BAid also includes access to real-time communication which is the wristband allows for the real-time conversion of speech to text, giving users instant access to spoken language via text that is shown on a smartphone screen. This function closes a significant gap by providing deaf people with a useful way to comprehend spoken communication in a variety of settings. Furthermore, an environmental awareness element is also being used in BAid when the wristband improves environmental awareness by alerting users to significant sounds, like doorbells or car horns, that they might not otherwise notice. It does this by combining sound recognition and programmable vibration warnings. This feature aids with the safety and awareness of deaf people in their environment. The benefit of this smart hearing aid wristband is its ability to enhance communication accessibility and ease of interaction for deaf people in their daily lives.

5.0 CONCLUSION

In conclusion, the BAid smart hearing aid wristband represents a significant leap forward in addressing the communication challenges faced by the deaf community. By incorporating innovative features such as real-time speech-to-text conversion and customizable vibration alerts, this device offers a practical and user-friendly solution for enhancing accessibility and autonomy in daily interactions (Smith & Johnson, 2023). Building upon the rich cultural identity and resilience of the deaf community, BAid fosters inclusivity and empowerment, aligning with the ongoing efforts to create a more inclusive society (World Health Organization, 2020).

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