

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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	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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Blynus Vision

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ABSTRACT

Accessing written information poses challenges for individuals with blindness or visual impairments due to the limited availability of braille. Concerns have been raised in Malaysia about disability and the treatment of people with disabilities, often known as Orang Kurang Upaya (OKU) or Persons with Disabilities (PWD). To address this, Blynus Vision with text-to-speech capabilities have been developed. This project introduces these glasses as a solution to empower the visually impaired to access information independently. The objective is to provide a practical tool that seamlessly integrates into everyday life, offering real-time conversion of text into spoken audio. The novelty lies in the integration of speakers and cameras into wearable technology, catering specifically to the needs of the disabled community. These glasses offer both convenience and usability, enhancing accessibility and promoting independence. The potential for commercialization is significant, given the demand for inclusive assistive technologies. In conclusion, smart glasses represent a promising advancement in accessibility, enriching the lives of individuals with visual impairments and fostering inclusivity in society.

Keywords: Person with disabilities (PWD), Smart glasses, Accessibility Technology, Visual Impairment Aid, Text-to-Speech Integration

INTRODUCTION

Reading serves as a fundamental skill to gain knowledge and information. It allows individuals to explore new ideas, understand diverse cultures, and gain valuable insights into the world. Unfortunately, people with blindness or visual impairments face significant barriers in accessing written text. Braille is a tactile writing system that converts letters, symbols, and typography to a system of raised dots (Dolphin et al., 2024). But it is not universally available on everyday items like magazines, signs, menus, and labels.

Assistive technology offers innovative solutions to bridge this gap. One promising advancement is smart glasses equipped with cameras. These glasses will capture text and convert it into spoken audio, providing real-time access to information previously unavailable through

braille alone. This technology has the potential to empower blind individuals and promote greater independence by making written information more accessible.

1. OBJECTIVE

This project aims to introduce smart glasses equipped with cameras designed to assist blind and visually impaired individuals in accessing written information more independently. These innovative glasses work by capturing text through their cameras and converting it into spoken audio outputs that can be heard by the user. By providing real-time audio translations of text, these smart glasses empower users to read materials in various everyday situations without relying solely on braille or assistance from others.

NOVELTY & INVENTIVENESS

These smart glasses were developed to help the disabled community, especially those who were blind or have visual impairments, to read printed text and navigate their surroundings.

PRACTICALITY & USEFULNESS

Easy to wear like normal glasses, smart glasses act as normal glasses or sunglasses for users to wear. Blind or physically impaired people as the targeted user can wear it without getting any unusual attention from people when going outside. Furthermore, most sightless people already wear some eye protection like sunglasses as their own protection from the UV light so wearing a technologically smart normal looking glass is not theoretically hard for the targeted user. For the speakers, it is integrated within the smart glass. The speakers are along with the product as a whole so the user does not have to physically pair it with other devices for example mobile smartphones to use it. Camera works the same way as the speakers. It does not need to be paired with other devices because it works simultaneously with the glass itself providing users with a seamless piece of tech. Additionally, the smart glass works as mentioned above by converting camera input to sound output so the user can hear the words without reading it or technically see the intended reading material. This can be a huge advantage for people with lacking eyesight as you can imagine the user can have a faster response to reading material and react more accordingly like reading sign direction without asking people for directions. For the pragmatics, they can delve into books without even reading it. Some people prefer audio as their medium of consumption rather than sight. The obvious example of this is Amazon's Audible.

CONCLUSION

In conclusion, the integration of text-reading capabilities into smart glass technology represents a significant leap forward in accessibility, convenience, and productivity. By seamlessly converting printed text into audible speech directly within the wearer's field of vision, this innovative product not only enhances reading experiences but also empowers individuals with visual impairments or those engaged in multitasking activities. Furthermore, its potential

applications span various domains, from educational settings to daily life tasks, making it a versatile tool with the power to transform how we interact with written information. As we continue to embrace advancements in augmented reality and assistive technologies, the future holds promise for even more inclusive and efficient solutions to enrich our lives.

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