

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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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 (MIIEX), 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.

MIIEX 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 MIIEX 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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Thank you.

MIIEX'24 ORGANISING COMMITTEE

COMMITTEE	NAME
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	DR NORASHIKIN ADAM
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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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Universe Ring: Empowering Reading Accessibility for People With Disabilities

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ABSTRACT

The Universe Ring is a revolutionary assistive device designed to address the challenges faced by individuals with disabilities in accessing written content. The problem of limited accessibility to reading materials among this demographic has long been recognized, prompting the development of innovative solutions like the Universe Ring. The objectives of this product are twofold: to provide a seamless reading experience for people with disabilities and to promote inclusivity in accessing information. Unlike traditional assistive devices, the Universe Ring stands out for its compact design and multifunctionality, making it suitable for a diverse range of users. The novelty of the Universe Ring lies in its integration of advanced technologies, including optical character recognition (OCR), text-to-speech conversion, and customizable tactile feedback. This combination allows users to engage with written content in various formats, such as auditory, visual, and tactile, catering to individual preferences and needs. The impact and usefulness of the Universe Ring are significant, as it empowers people with disabilities to read independently and participate more fully in educational, professional, and recreational activities. By breaking down barriers to access, the Universe Ring promotes literacy, fosters cognitive development, and enhances overall quality of life for users. Furthermore, the potential for commercialization of the Universe Ring is promising, given the growing demand for assistive technologies and the expanding market of individuals with disabilities worldwide. With further development and marketing efforts, the Universe Ring has the potential to become a widely adopted solution, benefiting both users and stakeholders in the accessibility technology sector.

Keywords: Assistive technology, Reading accessibility, Disabilities, Innovation

1.INTRODUCTION

Based on the National Eye Survey 1996, blindness for all levels covers 0.2% and nearsightedness covers 2.44% of the total population in Malaysia and also based on the Refractive Error Study in Children 2003, visual impairment in children aged between 7-15 years is 0.1 %. The main cause of limited vision is untreated cataracts and myopia, this data was released by the 2014 National Eye Survey. Having vision problems may cause a lot of difficulties, through research done most blind people will learn to use braille to read, but there is a lot of important information that is not written using braille for example, information signage in public places. Therefore, the production of these high-tech and modern innovative products has the potential to attract and help introduce new features and functions to the market and most importantly these can be used every day to facilitate their daily routine.

2.OBJECTIVE

The basic goal of developing assistive devices is to empower people with disabilities by giving them tools and technology (suitable assistive devices) that meet their unique requirements, increase their independence, and improve their quality of life. These gadgets seek to bridge the gap between people's skills and the needs of their surroundings, allowing them to engage more actively and inclusively in a variety of daily activities such as communication, education, job, and social contact. Furthermore, assistive devices aim to promote equality, accessibility, and dignity for persons with disabilities, giving them more possibilities to live satisfying and meaningful lives. The primary goals of this Universe Ring are twofold: to create a smooth reading experience for persons with impairments and to encourage diversity in accessing information.

3.NOVELTY & INVENTIVENESS

The Universe Ring is a groundbreaking invention that has revolutionized the way blind people are able to read. This innovative piece of technology is a ring that can be worn on the finger and uses advanced sensors to scan and convert text into Braille. This means that blind individuals can now read any text, whether it be a book, a menu, or a street sign, simply by running their finger over the surface of the ring. The ring is also equipped with a small speaker that can read the text aloud for those who prefer to listen rather than read in Braille. This level of accessibility and convenience has never been seen before, making the Universe Ring a truly unique and remarkable invention. It allows blind people to have the same access to information

as sighted individuals, breaking down barriers and promoting inclusivity. The ring is also incredibly compact and discreet, making it easy to carry around and use in any setting. Its versatility and practicality make it a game-changer in the world of assistive technology for the visually impaired. The Universe Ring is not just a piece of technology, it is a symbol of progress and empowerment for the blind community. It is a testament to the power of human ingenuity and the endless possibilities that can be achieved through innovation. With the Universe Ring, blind people can now navigate the world with greater independence and confidence, and that is truly something to be celebrated.

4.PRACTICALITY & USEFULNESS

The ring equipped with advanced sensors to scan and convert text into Braille could be highly practical and useful for individuals with visual impairments. The first one is portability. This is because ring-sized Braille readers would be very portable, enabling users to read text in a variety of locations, including while on the road, in contrast to typical Braille readers, which may be heavy and need a flat surface to function. Next, the Ring is very convenient. Users may read and access printed material discreetly without the need for further equipment by wearing the gadget on their finger. This ease of use encourages self-reliance and gives people greater freedom to interact with their environment. The last one is that the Ring can provide a real time conversation to users because the modern sensors may be able to translate text into Braille in real time, giving users instant access to printed objects like menus, books, and signs. This function improves responsiveness and efficiency when traversing the surroundings.

5.CONCLUSION

In conclusion, the emergence of the Universe Ring marks a significant milestone in the field of assistive technology, particularly tailored to address the needs of individuals with disabilities, notably those encountering visual impairments. Through its integration of sophisticated features such as tactile feedback, auditory cues, and seamless connectivity, the Universe Ring not only facilitates a smoother reading experience but also promotes inclusivity in accessing information across diverse formats. Its innovative design, blending advanced technology with empathetic engineering, underscores a commitment to breaking down barriers to access and fostering equality in participation. By championing the principles of universal design and advancing the cause of inclusivity, the Universe Ring not only enhances the quality of life for its users but also sets a precedent for future advancements in assistive technology

aimed at promoting greater independence and participation for individuals with disabilities within society.

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