

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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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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	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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NaviCane

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Abstract

People who are disabled, either by birth or accident, experience physical or mental limitations that make it difficult for them to fully enjoy life. Technology offers various tools to assist them in their daily lives. Kayou Enterprise introduces smart canes to assist people with vision impairments become independent. These canes offer features such as sensor technology that has sound aids to alert users of obstacles in their path when detecting obstacles and reflectors for safe navigation. The existence of a reflector on this cane is for safety concerns for the user to avoid any accidents. Other than that, obstacles can range from small items on the ground to larger objects like furniture or vehicles. The cane must be sensitive enough to detect these obstacles without false alarms. Our canes feature a button mechanism for easy extension and retraction, unlike traditional sticks, making them user-friendly as they only require a single press to operate. A telescope's shape inspires Kayou Enterprise's cane. The cane's distinctive design encourages the user to use it more fashionably and ergonomically. We use the TikTok platform to post videos using FYP hashtags so that people can easily find our videos. Our videos showcase the functionality and durability of our canes, helping potential customers make informed decisions. Not to mention, we plan to paint the cane's body parts using reflective paint to simplify the production process. The reflective paint will also enhance visibility for users in low-light conditions, adding an extra layer of safety.

Keywords: Reflector, Cane, Person with disabilities, Visual impairment

1. INTRODUCTION

Assistive technology has become an indispensable tool for individuals with visual impairments, significantly improving their quality of life and independence. Among these technologies, blind canes stand out as a critical aid for navigation, safety, and daily living. Kayou aims to explore the innovative advancements and challenges associated with the design and functionality of modern blind canes. We delve into the evolution of blind cane technology, examining how advancements in sensor technology, ergonomic design, and user-friendly features have transformed these tools from simple sticks to sophisticated devices with plenty of capabilities.

2. OBJECTIVE

Kayou Enterprise is committed to supporting the visually impaired community by providing high-quality smart canes. We use premium materials to ensure cane durability and employ local residents, creating job opportunities. Our focus on innovation is evident in our ongoing research on cane technology, allowing us to minimize waste and develop new products. To increase accessibility for our customers, Kayou Enterprise promotes its canes in shopping centers and partners with local retailers and online marketplaces.

3. NOVELTY & INVENTIVENESS

The Kayou cane features a unique telescopic design inspired by telescopes. This innovative design allows users to collapse the cane for easy storage and portability. The cane also includes a light reflector, enhancing visibility for both the user and motorists at night, which can help reduce the risk of accidents.

4. PRACTICALITY & USEFULNESS

Clovernook (2020) mentions that sometimes wear and tear on a white cane can lead to unsafe issues. The Kayou's cane offers greater durability compared to traditional canes because it uses high-quality materials and only needs a button press for storage and use. People who are blind face challenges navigating their surroundings. Traditional canes can be limiting, as noted by Kathy Austin (2016), who mentioned getting their cane stuck in cracks. Additionally, BBC News (2015) highlighted the lengthy learning curve for using a cane. The Kayou smart cane aims to address these issues. Equipped with sensors and sound aids, it can help users detect obstacles and

navigate more easily. Bawa Tech Team (2018) notes that choosing the wrong length for your white cane can make walking a painful and tedious process as you are forced to take small, unsure steps. The Kayou's cane ensures proper length for each user, making walking more comfortable and eliminating the pain and uncertainty associated with taking small steps. Scispace (2024) raises concerns about the cost, maintenance, and potential malfunctions of smart canes in general. The Kayou cane strives to minimize these drawbacks by optimizing affordability, minimizing maintenance needs, and improving reliability.

5. CONCLUSION

A business of any size needs to stay well organized and up-to-date with the latest technology trends to remain competitive in the market. Kayou Enterprise is introducing a smart cane that enhances independence for visually impaired individuals by integrating sensor technology, sound aids, and reflectors for obstacle detection and safe navigation. The user-friendly design, inspired by a telescope, features a button mechanism for easy extension and retraction. It also uses reflective paint for visibility and safety. The canes are showcased on TikTok to inform potential customers.

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