

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 (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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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

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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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Smart Portable Stick

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Abstract

Blind people consists of a large group of people in our society. Losing their eyesight has caused them inconvenience in performing daily tasks. Hence, smart portable stick had been developed in order to increase the life quality of a blind person. The reason why is this product need to be innovate is because of blind people cannot easily recognize obstacles while using normal blind stick. Plus, the existing stick in market make the blind people facing with a problem like they cannot reach to unfamiliar places. Then, this product is to easier blind people to reach unfamiliar destinations or direction. It also to help blind people recognize obstacles that might put in a dangerous situation. Next, this innovation is to help blind people get emergency help quickly and easily. Others, 'Smart Portable Stick' is the innovation that not like ordinary that can be found anywhere. This is because it is came with a multiple features and problem solution which is it high technologies that link with mobile phone and portable. Our product is completed with audio to show the direction. This product is useful and impactful for blind people because it is automatically detect the obstacles infront of the person by use of sensor present in the systems. It is great commercial potential because "Smart Portable Stick" are not yet sold anywhere on the market. It also has advanced features and functions as suggested by various reports of current problems faced by visually impaired people.

Keywords: visually impaired¹, blind people², multiple features³, high technologies⁴, mobile phones⁵

1.0 INTRODUCTION

Technology is the basic use of human life in this age. There is an overflow of technological innovation related to user convenience like tools used in daily life. The convenience of technology in human life is very important to fulfill the daily routine or work that needs to be done from day to day. For human beings, there is also a very high demand for facilities to complete their responsibilities. We cannot discriminate against human rights in their daily lives. High-tech facilities for the disabled also need to be given attention to help them easier their lives when there is no help from those around them. Visual impairment can occur at any age and ranges from low vision to total blindness. In Malaysia prevalence of blindness for all ages is 0.2% and low vision is 2.44% (National Eye Survey, 1996). Prevalence of blindness among children 7 to 15 years is 0.1% (Aminah, 2012). Where vision trouble was defined as "trouble seeing". This innovative product has been specially designed for the visually impaired. In the market that we can see blind stick will helped blind people to walk wherever they go. The stick has been systemized to help them walk by using tactile sensors on the road. For instance, blind people have used roads specially designed for them that are different from normal people, that is there are differences in the road design. Thus, 'Smart Portable Stick' is the life changer for blind people in the future. Lots of features that has been improve all in one stick to help them in every situation.

2.0 OBJECTIVE

A blind stick is a tool that helps the blind people to navigate and move around in public areas. The blind person is expected to move the stick in front of him to ensure no obstacle is in his way. When the stick comes in contact with an obstacle, it is an indication for the blind person that he needs to change the path he was moving in. The smart blind stick aims at giving the blind person a better understanding of the path he is moving in. The objective for this product is to help visually impaired people to walk and make it easier for them to move to the location they want. By adding a function that can be connected to a smartphone, it can make easier for family members to track their movements. In addition, the second objective of this product to innovate the existing product to a better one by adding a sophisticated system and this innovative product also has many functions that are believed to be easy and safe to use by people in need namely people with visual disabilities. With the help of the data processed using these technologies we aim at providing a better and more convenient method of navigation for

the blind person. This stick helps them achieve a higher rate of self-dependency. The system gives a priority to safety and comfort.

3.0 NOVELTY & INVENTIVENESS

According to market review, an **increasing demand for assistive walking stick technologies has boosted the growth of walking stick market**. Most blind walking stick in the market was not too perfect for blind people. This product specially created with multiple uses for blind people such as included with foldable stick, emergency button, GPS tracker, 360 camera, sensor to detect any obstacles and the location of the stick and this product can be accessed by smartphone via application that can be installed on Google Play Store, Apple Apps Store and Huawei App Gallery. By installing the apps, we can trace the location of the stick if the user forgot where they put the stick or they lost it. The product materials is stainless steel which is impact resistance and strength, waterproof, sustainability and long term value. For the sensor audio this product use Malay languages and English languages to tell the direction for the user.

4.0 PRACTICALITY & USEFULNESS

This product invention is expected to help blind people to go through with their daily life in various ways. This product come with sensor to detect any danger and included with GPS tracker. This product will trace the location of the stick if the user forgot where they put it. By having a 360 camera, the family members of the user can help mapping the surrounding area such as house or room. The sound included with automatic emergency alarm when the danger approaches with the surrounding. This product is made by stainless steel which is one of an extremely tough and highly durable materials that can be use in long term. Because of the waterproof materials, this product will be fine while using it rainy day and the price is reasonable with various features included in this product.

5. CONCLUSION

In conclusion, some blind walking stick in today's market did not come with many features. We decided to innovate this product to be more useful for blind people to go through with their daily life and this product is portable which is easy for them to bring anywhere. This product will help a lot for blind people in many ways such as emergency button, GPS tracker, 360 camera and sensor. This product will be advertised on the economy market in Malaysia and other country. Lastly, this product can help the blind people to trace all the danger and location when they want to go.

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