

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
KM26 Jalan Lendu,
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MiiEX'2024

MELAKA INTERNATIONAL INTELLECTUAL EXPOSITION 2024

“EMPOWERMENT OF SPECIAL NEEDS THROUGH INVENTION AND
INNOVATION”

EDITORS AND COMPILERS:

Dr Maimunah Johari

Puan Norlinda Tendot Abu Bakar

Puan Maymunah Ismail

Puan Nor Halawah Ahmad

Cik Afzan Shahilla Amir Hamzah

Puan Azira Rahim

COVER DESIGN:

Rashidy Samsudin

Wan Nur Khalisah Shamsudin

Ridzuan Adli bin Azidin

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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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PROJECT DIRECTOR	DR ZULKEFLI BIN MUHAMAD HANAPIYAH
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	TUAN MUHAMMAD IDRIS IRFAN BIN TUAN MOHD AZAHAR
	RASEEDA BINTI HAMZAH
	TS. DR. NOR AFIRDAUS BINTI ZAINAL ABIDIN
DESIGN & MULTIMEDIA	EN RASHIDY SAMSUDIN
	RIDZUAN ADLI BIN AZIDIN
	WAN NUR KHALISAH SHAMSUDIN
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	DR NORASHIKIN ADAM
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	PN MAYMUNAH ISMAIL
	PN NOR HALAWAH AHMAD
	PN AZIRA RAHIM
	NORLINDA TENDOT ABU BAKAR
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	MOHD SUFIAN AB KADIR
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	ERRATUL SHELA ESHAK
	NUR FAITHZAH JAMIAN

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TECHNICAL & VENUE	EN MAZ IZUAN BIN MAZALAN
	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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IntelliCane (Smartcane)

Nur Athirah Binti Ibrahim¹, Mas Hidayu Binti Md Nuar², Qasrina Batrisyia Binti Muhammad Zakir³, Adilah Binti Ali Othman⁴, Siti Nuraisyah Binti Raub⁵, Joeaiza Binti Juhari⁶

^{1,2,3,4,5,6} Universiti Teknologi MARA (UiTM) Alor Gajah, Cawangan Melaka.

athirahmirah042@gmail.com

Abstract

SmartWay aims to create a future where individuals with disabilities can lead better lives through our advanced technological products. Our company has developed a product called "Intellicane" to assist blind people. "Intellicane" is a smart cane equipped with features such as obstacle recognition, fall detection, and navigation. Furthermore, our company recognizes that existing smart canes have extremely basic features. Therefore, to make our smart cane unique, we have added features like customizable settings that allow users to personalize their cane based on environmental conditions and the ability to easily connect "Intellicane" to smartphones and hearing aids if needed. In terms of novelty, we have incorporated an Emergency Alert System feature that will notify the user's family in case of an emergency. With our advanced "Intellicane," we believe we have a great chance of receiving positive feedback and achieving significant success from people with disabilities. We believe that our "Intellicane" product can help blind people walk more easily, despite any barriers or limitations, enabling them to move freely like sighted people. We have been testing our product on blind individuals for the past three months, and the results indicate that there are no issues. As a result, we are moving forward with releasing our product to the wider public. In conclusion, we hope that by utilizing our "Intellicane," our product will ensure that blind people can travel safely to their destinations.

Keyword: People with disabilities, Blind, Smartcane

1. INTRODUCTION

People with Disabilities (PWD) refers to people with long-term physical, mental, intellectual, or sensory disabilities that limit their ability to fully and effectively participate in society when faced with challenges (MyGOV, 2024). The definition of a smart cane is a stick designed to detect obstacles, such as holes and barriers, and also serves as a reminder to blind people to walk on the designated sidewalk. Depending on the distance between the obstacles and the depth of the holes, we make different alert noises with the cane (Shifeng, 2018). Several sensors, processors, and feedback systems are built into these canes to help them identify impediments, changes in the terrain, and other environmental cues. All things considered, intelligent canes give blind and visually impaired people more mobility and independence, enabling them to move around more confidently and safely.

2. OBJECTIVES

The important objective of the Intellicane product is to provide better support for mobility and safety for them. Better mobility, feedback, increased safety, increased freedom, and social support are some of the ways this can be accomplished. Furthermore, our organization may provide this group job chances by implementing new improvements. Our company produces unique goods that are designed with unique characteristics and with the requirements of the disabled community in mind. The visually impaired or blind individuals who use our product (intellicane) have the opportunity to work anywhere because it helps them to walk as far as they want because there is no limit to the range when using our smart cane. Not only that, it can also facilitate their daily activities because there are various new functions that we have created in this product. Furthermore, this product is created to further enhance safety features to ensure the security of this group is guaranteed and to prevent them from any dangers that can be detected through sensors and alarms.

3. NOVELTY & INVENTIVENESS

Intellicane is created and innovated continuously to ensure that it is up to date with the latest and the most recent technological developments. For example, Intellicane have obstacle detection, integrated voice assistant, can connect via Bluetooth or Wi-Fi and more. With its novel features it will undoubtedly make it easier for visually impaired individuals to travel the world with greater ease and independence. The International Classification of Functioning, Disability, and Health (ICF) states that impairments, limitations on activities, and participation restrictions are all included under the general term of disability (Gray, 2013). IntelliCane is created in hope to lower restrictions and encourage visually impaired individuals to engage in all important life activities. IntelliCane is innovated and developed continuously to ensure that it is up to date with the latest and the most recent technological developments. For example, IntelliCane have obstacle detection, integrated voice assistant, can connect via Bluetooth or Wi-Fi and more. With its novel features it will undoubtedly make it easier for visually impaired individuals to travel the world with greater ease and independence.

4. PRACTICALITY & USEFULNESS

Intellicane is expected to make life easier for visually impaired individuals. By providing enhanced safety feature such as obstacle detection, Intellicane allow users to navigate their surroundings with confidence. Their family members will also feel happy because they do not have to worry about their safety. Our Intellicane is not just a technological innovation but a sincere commitment to improving the quality of life for individuals with visual impairment.

5. CONCLUSION

In conclusion, Intellicane stands as a revolutionary advancement in assistive technology, offering enhanced mobility and safety for the visually impaired. By leveraging state-of-the-art sensors and Artificial Intelligence (AI) algorithms, IntelliCane provides real-time feedback, empowering users to navigate with confidence. As referenced from the latest research in assistive technology (Dias et al., 2023) and (Johnson & Lee, 2022), Intellicane represents a significant step forward in promoting inclusivity and independence. Intellicane helps people with disabilities feel more confident and self-assured in carrying out daily activities. It assists

them in accomplishing tasks beyond their abilities. With our product, we can facilitate every movement from one place to another for them.

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