

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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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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Smart Wheelchair

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Abstract

Wheelchairs have long been essential tools for individuals with disabilities, yet they often lack the advanced features and user-centric design needed for optimal functionality. That's where our Smart Wheelchair steps in, offering a revolutionary solution for individuals with disabilities and older adults. With high-tech stuff like sensors, smartphone control, voice command, GPS, and stair climbing mechanism, this wheelchair is a game-changer. It's incredibly convenient and safe, making mobility easier and more enjoyable. By emphasizing quality materials and ongoing research, this innovative wheelchair is constantly improving to meet the evolving needs of its users. Therefore, purchasing our Smart Wheelchair isn't just about buying a product, it's an investment in improved mobility and satisfaction. So, whether you're navigating busy streets or tackling uneven terrain, the Smart Wheelchair is there to make your journey easier and more enjoyable.

Keywords: Disabilities, convenient, mobility, user-centric

1. INTRODUCTION

According to Jabatan Kebajikan Masyarakat (department of Social Welfare, JKM) which manages the Persons with Disabilities (OKU) registry, there are a total of 637,537 persons with disabilities as of 31st January 2023, which is about 1.9% of Malaysian population. Being the minority, disabled people sometimes face discrimination by normal persons. There are many facilities that they need to live their life. One of them is a smart wheelchair with many features that can help them. Traditional wheelchairs, both manual and electric, have provided necessary mobility to them. However, they frequently require physical effort or support and may not satisfy the needs of users with complex disabilities.

As a way of promoting equality in using facilities for study, Smart Wheelchairs were invented. This special chair is designed to give pleasure to users, mainly people with difficulty in walking. The smart wheelchair is equipped with a variety of advanced features including sensors, control via mobile devices, voice-controlled, GPS tracker and stair-climbing mechanism.

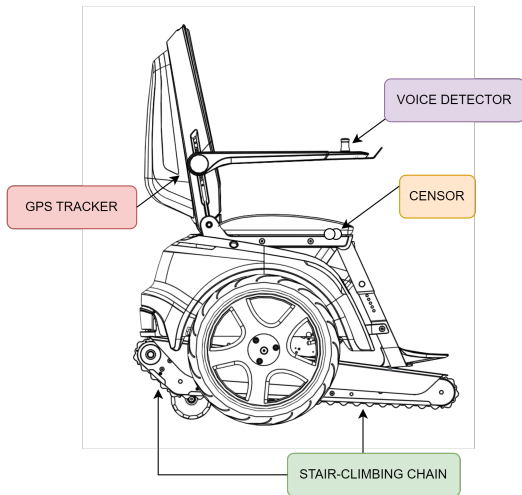
People with difficulty in walking face problems when involved in a physical activity. The wheelchair manufacturer might not be interested in creating more advanced wheelchairs as the cost is higher than normal wheelchairs. So, the author initiated the problem into an idea and decided to create a Smart Wheelchair, which has many advantages and multi-functions. This product is appropriate for nowadays era where people have a high demand product to ease their life.

2. OBJECTIVE

- i. To promote independence, safety and convenience.
- ii. To enhance mobility and participation in daily activities.
- iii. To improve patient care and operational efficiency.
- iv. To offer comfort and ease of use, supporting their desire for independence.
- v. To reach and serve each segment effectively.

3. NOVELTY & INVENTIVENESS

Product Name Smart Wheelchair



Used Item

Stainless steel

Sensor

Camera

GPS

Product Features

1. Comes with censored
2. Control via mobile devices
3. Voice-controlled
4. GPS tracker
5. Stair-climbing mechanism

Slogan

"Empowering Mobility, Enabling Independence: Your Smart Wheelchair Solution."

4. PRACTICALITY & USEFULNESS

In the coming years, we would like to ensure that our product, Smart Wheelchair, will become more unique and always provide benefits to its users. To guarantee we achieve that goal, we might change some features to enhance the ability of the smart wheelchair in the safety and reliability area through robust design, redundant systems and fail-safe mechanisms. This includes detecting and mitigating potential risks such as collisions, tipping and mechanical failures. Additionally, we could customize the Smart Wheelchair with a broader range of appealing colors, which will catch people's attention.

Benefits

There are many benefits user can get by using our Smart Wheelchair, such as:

i. Increased Efficiency

Smart Wheelchairs are much faster than manual wheelchairs, allowing users to cover greater distances in a shorter amount of time.

ii. Improved Safety

Smart wheelchairs are equipped with safety features, anti-tip wheels, which prevent the chair from tripping over, and brakes, which allow the user to come to a stop quickly and safely.

iii. Less Physical Strain

Manual wheelchairs require a lot of physical effort to push, particularly when traveling over long distances. Smart wheelchairs eliminate this physical strain, allowing users to move around more easily.

5. CONCLUSION

We are contended to innovate the Smart Wheelchair to ease our potential customer's mobility challenges, providing them with such advanced features. We hope that our product will significantly enhance the daily lives of individuals with disabilities and the elderly, offering unparalleled convenience, efficiency and safety. We hope that by introducing this product, it

could ease everyone, and we would like to create a long-term relationship with the customer for a better improvement in the future.

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