

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

Website: <https://vmiex.uitm.edu.my/>

MiiEX'2024

MELAKA INTERNATIONAL INTELLECTUAL EXPOSITION 2024

“EMPOWERMENT OF SPECIAL NEEDS THROUGH INVENTION AND
INNOVATION”

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PUBLISHED BY:

UiTM Cawangan Melaka

KM26 Jalan Lendu,

78000 Alor Gajah

Melaka Bandaraya Bersejarah

Tel: +606-5582094 / 2190 / 2113

eISBN: 978-967-2846-81-9

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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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Attachable Roof for Wheelchair

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Abstract

Caregivers assisting individuals with disabilities encounter challenging conditions in the great outdoors of Malaysia, where rainfall can change suddenly to scorching sunshine. It is particularly difficult to manoeuvre a wheelchair while carrying an umbrella, particularly on winding paths or in crowded areas. Hence, the wheelchair needs the attachable roof to provide rain and sun protection. Caregivers are then able to concentrate on safely steering the wheelchair, as carrying an umbrella eliminates the additional burden and weight. The benefits are that the individual with a disability will no longer have to worry about getting wet, and the caregivers can maintain a steady grip on the wheelchair with both hands. This guarantees effortless movement. Furthermore, the weather in Malaysia can be extremely hot. Imagine attempting to keep a person in a wheelchair cool and shaded while pushing a wheelchair through the brutal sun. However, the attachable roof allows caregivers to offer shade while minimising physical effort. It is similar to possessing a portable shelter that follows the wheelchair wherever it goes. The Attachable Roof enhances outdoor usage in Malaysia for wheelchair users and caregivers by eliminating the inconvenience associated with umbrella carrying. It is a straightforward yet effective solution that promotes independence and comfort. Additionally, it fits the majority of wheelchairs and is simple to install, allowing anyone to use it efficiently. Caregivers are able to concentrate on organising memorable outdoor experiences with the assurance of dependable weather protection provided by the attachable roof on the wheelchair.

Keywords: wheelchair, attachable roof, caregiver, disability people

1. INTRODUCTION

Innovation has always been the driving force behind advancements that enhance the lives of individuals with physical disabilities (Avutu, Paul & Reddy, 2023). In this pursuit of creating a more accessible world, we present a groundbreaking concept that merges practicality, convenience, and protection for wheelchair users. For individuals with disabilities who rely on wheelchairs as their primary means of mobility, exposure to inclement weather poses significant challenges (Venkataram et al., 2024). Rain, snow, and intense sunlight can not only cause discomfort but also have detrimental effects on their health and well-being (Dahlberg et al., 2022). The integration of an umbrella into the wheelchair design serves as an effective solution. Hence, addressing the specific needs of wheelchair users and providing them with a vital tool for weather protection and independence. The innovative wheelchair also embodies the principles of efficiency. By eliminating the need to carry multiple items while operating a wheelchair. This innovation allows wheelchair users to focus on navigating their surroundings with ease.

2. OBJECTIVE

The attachable roof aims to assist disabled people with wheelchairs facing the weather in our country. Providing a roof with a holder that can be easily attached to a wheelchair and a button that can make the roof open and close automatically. Wheelchair users could have their own protection from rough weather such as rain, excessive heat, snow, and more. The wheelchair user could easily initiate their roof without needing other people to open the umbrella for them. The roof's material is highly durable, resistant to heat, flying objects, and water. The detached roof can be folded to save more storage. The attachable roof is affordable for everyone.

3. NOVELTY & INVENTIVENESS

The product is designed to be attachable to the wheelchair, thus eliminating the need for customers to purchase an entire wheelchair.

4. PRACTICALITY & USEFULNESS

This product is expected to provide instant weather protection to wheelchair users; therefore, this product can help improve their convenience and independence. It also provides a practical

solution that removes the need for carrying accessories and encourages movement and participation in a variety of activities.

5. COMMERCIALIZATION POTENTIAL

- Target market

Target markets it to everyone, especially wheelchair users. Since The Attachable Wheelchair Roof is a specialized solution designed for wheelchair users who need protection from various weather conditions. This product offers optimal coverage against rain, excessive heat, snow, and more, making it suitable for wheelchair users of all ages and backgrounds. The roof operates via an easy-to-use button that allows for automatic opening and closing, providing wheelchair users with increased convenience and control, as shown in Figure 1. The product is constructed from highly durable, heat-resistant, and water-resistant materials, ensuring long-lasting performance and reliability. The materials used are iron hollow, waterproof fabric, and button.

- Cost and market price

- I. Iron hollow = RM 80

- II. Waterproof fabric = RM 40

- III. Button = RM 10

- Cost = RM 130, Market price = RM 150

- Selling Strategy

The sales strategy includes advertising, campaigns, or sponsorships to clearly communicate the purpose of the product. The Attachable Roof is a single product that can be effectively promote on social media platforms such as TikTok, Facebook, and Instagram.

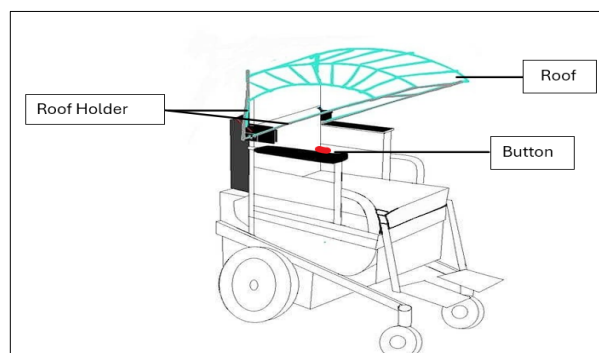


Figure 1 Attachable Roof for Wheelchair

6. CONCLUSION

In conclusion, this innovation is very convenient for the disabled people due to several factors. One of the factors is it can help the disabled people to be more independent. Moreover, it is easy to carry anywhere by simply attaching it to the handle of the wheelchair. This innovation can benefit the disabled people because it provides as a cover for wheelchair users and can protect them from the rain and the sun. Now, wheelchair users do not have to worry if the sky gets dark or when the sun is scorching. This innovation will really help the disabled people achieve some of the dependence that they want. It provides a simple way to attach the product to the wheelchair and is very user-friendly.

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