

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 (MIIEEX), 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.

MIIEEX 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 MIIEEX 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

COMMITTEE	NAME
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	BUSHRA ABDUL HALIM
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	FAIQAH HAFIDZAH BINTI HALIM
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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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3D Flexy Leg” Silicone-Based Prosthetic Leg

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Abstract

The 3D Flexy Leg is a product specially designed for people with special needs, especially individuals who have lost their legs. This product has high-quality details that help them to walk or run comfortably and provide services to make the person adapt to the new legs by giving motivational support to them to boost their confidence in their life. It is run by a startup company called “The Steeper,” located in Kota Tinggi, Johor. It is a partnership company owned by young people who are passionate about helping special needs people. The novelty of the 3D Flexy Leg is the adjustable features that equipped this artificial leg, which the users can adjust the height according to their preferences. The second uniqueness is the material used allowed the 3D Flexy Leg to look like real legs since we use silicone; besides, silicone-based legs improved comfort levels when wearing.

Keywords: Artificial legs, OKU Product, leg’s part, silicone-based legs

1. INTRODUCTION

People with disabilities sometimes require special apparatus to live their lives, such as artificial legs. However, due to technological changes, they are more aware of them, which makes them appreciate people with disabilities more. With the support, encouragement, and love from people around them, they have the potential to grow and develop themselves just like normal people. Our company was not an exception. In response to helping them, we offered a product to make them feel more confident: artificial legs. This will help people who have lost their legs due to an accident, disease, or disability since birth to walk or run comfortably and make their lives feel normal.

2. OBJECTIVE

The main objective for silicone-based artificial limbs is a tool used to replace lost limbs either as a result of an accident, disease, or birth defect. The function of Bionic Leg is to help them to be able to move and improve a person's quality of life such as giving new life and confidence to associate with other people. The aim is to help the underprivileged with cheap and have the best quality of the products. The 3D Flexy Leg provide service to design artificial limbs according to the user's taste such as height. In addition, artificial limb products can also make everyone aware that they can also live normal lives and that they deserve to be treated in the same way as everyone else and for people to stay fit and healthy when using our artificial limbs.

3. NOVELTY & INVENTIVENESS

In the pursuit of enhancing mobility and restoring independence for amputees, traditional prosthetic leg designs have often fallen short in replicating the natural function and versatility of the human limb. This idea presents a groundbreaking prosthetic leg concept that transcends conventional limitations, embodying a paradigm shift in assistive technology.

The 3D Flexy Leg designed integrates cutting-edge materials and advanced biomechanical principles to mimic the intricate movements and adaptability of the human leg. At its core lies a novel modular framework, engineered to seamlessly accommodate various user preferences and functional needs. This customizable design facilitates effortless adjustments, empowering users to optimize comfort, stability, and performance according to their unique anatomical characteristics and activity levels.

Furthermore, the incorporation of state-of-the-art sensors and artificial intelligence algorithms enables real-time feedback and adaptive control mechanisms, enabling the prosthetic leg to intuitively respond to changes in terrain, gait patterns, and user intent. By harnessing the power of machine learning, the system continually refines its predictive capabilities, fostering a symbiotic relationship between the user and the prosthetic device.

In addition, in terms of technical sophistication, this prosthetic leg embodies a holistic approach to user-centered design, prioritizing aesthetics, and ergonomics without compromising functionality. The sleek, streamlined silhouette not only enhances aesthetics but also minimizes bulkiness and promotes a natural, fluid movement.

Ultimately, this innovative prosthetic leg represents a transformative leap forward in assistive technology, transcending the boundaries between human and machine. By seamlessly integrating form and function, adaptability, and intelligence, it empowers individuals with limb loss to reclaim their mobility, autonomy, and dignity in ways previously thought impossible.

4. PRACTICALITY & USEFULNESS

3D Flexy Leg is made of silicone. The materials used in making a prosthetic can vary. Factors that include impact, weight of the user, or activity that be undertaken. Making the prosthetic needs a great deal of detailed hours by prosthetists and technicians to create manufactured prosthetics. We design the prosthetic leg to closely to resemble to their own foot. So, we pay attention like matching skin color, hair, veins, freckles, lines, and wrinkles. Also, it allows them to be comfortable to walk and running. It can be easily worn with socks or shoes. The product can be easily be washed. The 3D Flexy leg is a product to give people a chances in quality of life.

5. CONCLUSION

Artificial limbs help make it easier for users to make movements such as walking, running and do other activities. This artificial limb is also designed to give a ray of hope to the wearer so that they can live a life like normal people. Artificial limbs are changes that will be essential in the future, practical and user-friendly.

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