

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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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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Signaverse

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Abstract

We live in a world where language barriers have become an obstacle for people with disabilities such as the deaf and mute. Around 40,000 people in Malaysia have been registered as deaf-mute and hard-hearing individuals and most of them use sign language as their official language on a daily basis. In spite of this, the majority of Malaysians still have difficulty communicating with people who are deaf-mute as they did not learn sign language. Due to this, this project focuses on building a mobile application to learn Malaysia Sign Language (MSL) online called SignaVerse. This app is designed not only for deaf-mute people to learn, but also for normal people who want to learn sign language in order to overcome the language barrier. The users can play based learning from the beginner level until advanced level in interactive ways, interact with other people who have the same interest through online messages and live. It also consists of a system for text to MSL and MSL to text with 3D animation to make it easier while communicating between normal and deaf-mute people.

Keywords: Language barrier, learning process, Malaysia sign language, Application.

1. INTRODUCTION

Although Malaysia's deaf-mute community under the Persons with Disabilities (PWD) Act 2008 can be considered minor, it is not appropriate to exclude people who are deaf and mute from every aspect of society. Communication and good relationships with the community are also important to them. According to Lee Chonghui (2020), education policies should take full account of individual differences and situations to overcome the stigma in our society. The problem arises when their communication needs to be done using sign language, since not everyone is proficient in the sign language used by the deaf and mute. Malaysians are unaware of the importance of sign language due to a lack of exposure.

2. OBJECTIVE

This app was created with the aim of empowering the Malaysia Sign Language for use in daily life. Signaverse mobile applications also built to help disabled like deaf and mute individuals communicate with normal people. Since half of the people in Malaysia are not familiar with sign

language, Signaverse app is a good platform for them to learn about it. It is also a good opportunity for people of all ages to learn, increase knowledge and their skills and can support each other's linguistic development. Signaverse also wants to further spread the use of Malaysia Sign Language (MSL) and increase awareness among Malaysian citizens about learning sign language.

3. NOVELTY & INVENTIVENESS

This invention is designed to facilitate conversations between non-disabled individuals and those who use sign language as their mode of communication in daily lives. SignaVerse is an application of Malaysia Sign Language (MSL) exclusively for Bahasa Melayu as it is the most spoken language in Malaysia. Therefore, focusing on Bahasa Melayu would benefit all parties involved in communication within Malaysia. Other than that, SignaVerse app will be developed with a game-like interface that is both simple and comprehensive for the user just like other learning applications for example duolingo. To ensure an enjoyable learning experience, the application will be provided with interactive functionality, allowing users to actively engage with it. It allows users to interact with content or perform tasks, collect points and connect with new friends. This application aims to strengthen the relationship and close the gap between deaf-mute people and normal people in Malaysia. Thus, deaf-mute people will be included in every conversation and give them opportunities to express their feelings better when normal people can actually understand and connect with them.

4. PRACTICALITY & USEFULNESS

SignaVerse is an app that helps users to learn sign language in Malay. 3D Animation will be used to teach users the sign language for each word which will help users to accurately use sign language. SignaVerse users can simply type in their sentences and the app will show a 3D animation for the sign language. SignaVerse users can also record actions from deaf-mute people and the apps will give the translation of the sign language. Besides that, SignaVerse has many levels so that the users can slowly and efficiently learn sign language. In order for the users to be fluent in sign language, SignaVerse offers games that have many levels to help the users become better in using sign language while having fun. SignaVerse also prepares quizzes for the users to challenge themselves and to improve their sign language. This will help our society to become more connected with deaf-mute people and will increase the level of confidence in communicating between deaf-mute people and normal people.

5. CONCLUSION

In Malaysia, the deaf-mute community and the general public might find that the SignaVerse application is a crucial tool for improving communication. This application makes Malaysia Sign Language (MSL) accessible to a wide audience, regardless of their past sign language proficiency, by utilizing the power of 3D animations and interactive learning modules to help with MSL acquisition at different levels, from beginner to advanced. The software greatly improves ordinary communication by enabling users to interact comfortably and successfully with the deaf and mute by providing capabilities like real-time text-to-MSL translation and MSL-to-text recognition.

Additionally, the combination of quizzes and games with a playful learning interactive style will make it both entertaining and highly instructive. SignaVerse plays a crucial role in fostering inclusion and linguistic diversity by offering a platform for learning and interaction between both deaf-mute and hearing individuals. SignaVerse aims to reduce communication barriers and increase understanding among Malaysians by promoting fluency in MSL. It addresses the challenges faced by the deaf-mute community and promotes a more accepting and compassionate society. SignaVerse showcases the revolutionary potential of technology in bridging linguistic divides and improving the quality of life for all community members.

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