

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 (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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Gest2talk (G2t) Application

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Abstract

Deaf and mute individuals face significant barriers when communicating with hearing individuals due to the language divide between sign language and spoken language. Traditional methods of communication, such as writing or lip-reading, can be slow, challenging, and prone to misunderstandings. Existing applications for communication primarily focus on one-way translation from spoken words to sign language, leaving deaf and mute individuals with limited options for expressing themselves in a way that is easily understood by hearing individuals. Thus, deaf and mute individuals often struggle to communicate with hearing people bidirectionally due to the lack of support for translation from sign language to spoken words and vice versa. This one-sided approach can lead to feelings of isolation and hinder the ability of deaf and mute individuals to fully participate in social, educational, and professional settings. However, technological advancements have made it possible to bridge the gap between these communities, fostering understanding and inclusivity. The Gest2Talk (G2T) application addresses these issues by providing a cutting-edge platform that allows seamless communication through text and sign language translations. This application aims to bridge this communication gap by providing an innovative platform to translate communication between sign language and spoken words. This groundbreaking app leverages modern technology to facilitate barrier-free communication, fostering inclusivity and deep connections between mute, deaf and normal individuals. G2T offers features not present in existing applications by providing a two-way translation function, from sign language to spoken words and vice versa. This offers a more comprehensive and inclusive communication experience. G2T is designed to be user-friendly for a wide range of people. It leverages the latest technology to ensure accurate and fast translation, making it a practical tool for everyday communication situations. The uniqueness of this application lies in its ability to connect two

distinct language worlds, opening up more inclusive communication opportunities. This practical and useful tool serves as a bridge for genuine connections and meaningful interactions, highlighting the transformative power of technology in shaping a more accessible and empathetic society. Communication between deaf and normal individuals often faces significant challenges due to linguistic barriers and lack of understanding. These challenges can lead to social isolation and limited interactions, hindering the formation of meaningful connections. However, technological advancements have made it possible to bridge the gap between these communities, fostering understanding and inclusivity. The Gest2Talk (G2T) application addresses these issues by providing a cutting-edge platform that allows seamless communication through text or sign language translations. This groundbreaking app leverages modern technology to facilitate barrier-free communication, fostering inclusivity and deep connections between deaf and normal individuals. By offering a user-friendly interface and tailored features, G2T aims to promote empathy and facilitate meaningful interactions regardless of hearing capacity. The G2T app revolutionizes communication by providing a channel for both deaf and normal individuals to engage effectively without the limitations of language barriers. For deaf users, G2T offers a platform to express themselves fully and participate in conversations with ease. Normal users benefit from the app's ability to translate gestures into text, enabling seamless communication with deaf individuals and promoting mutual understanding. By facilitating real-time conversations and eliminating communication obstacles, the G2T app enhances accessibility and fosters connections that transcend hearing abilities, ultimately promoting empathy and inclusivity between these communities. The novelty and inventiveness of the G2T application lie in its ability to bridge the gap between normal individuals and those who are deaf, offering a user-friendly solution that eliminates the need for knowledge of sign language. By promoting the learning of sign language and facilitating communication through modern technology, G2T aims to prevent feelings of inferiority or inadequacy in the deaf community, fostering a more inclusive and supportive environment for all individuals. This practical and useful tool serves as a bridge for genuine connections and meaningful interactions, highlighting the transformative power of technology in shaping a more accessible and empathetic society.

Keywords: Linguistic barriers, Barrier-Free communication, Deaf and Normal individuals, Modern technology

1. INTRODUCTION

In a society where communication is essential for establishing and maintaining human connection, deaf and silent people have significant and broad difficulties when trying to engage with normal people. Effective communication is fundamental to human interaction and connection, yet for deaf and mute individuals, this essential aspect of life can present unique challenges. While they often rely on sign language to communicate, the broader population primarily uses spoken language, creating a significant barrier to understanding and connection. Existing communication tools and applications are limited in their scope, offering one-way translation from spoken words to sign language, which only partially addresses the problem. Lack of comfort speaking to others can result in miscommunication, loneliness, and restricted access to opportunities and information

To truly foster an inclusive and accessible society, there is a need for an advanced solution that allows for seamless and bidirectional communication between spoken words and sign language. This solution would empower deaf and mute individuals to express themselves clearly and be understood, while also enabling hearing individuals to engage more effectively with the deaf and mute community. The development of an innovative application that bridges this communication gap will significantly improve social interactions and enhance the overall quality of life for all involved parties.

To truly foster an inclusive and accessible society, there is a need for an advanced solution that allows for seamless and bidirectional communication between spoken words and sign language. To address this need, we have developed an innovative application known as Gest2Talk (G2T), which bridges this communication gap. G2T provides a comprehensive platform that facilitates efficient and effective two-way translation between spoken words and sign language. This empowers deaf and mute individuals to express themselves clearly and be understood, while also enabling hearing individuals to engage more effectively with the deaf and mute community. G2T significantly improves social interactions and enhances the overall quality of life for all parties involved.

2. OBJECTIVE

The main aim of G2T is to provide an application that can translate communication bi-directionally, from spoken words to sign language and vice versa. It is also designed to enhance social interactions and relationships between deaf and mute individuals and the general population. Besides, the apps also facilitate the participation of deaf and mute individuals in daily life and work environments. It is a user-friendly platform that facilitates barrier-free communication between both parties. Both special people and normal people can communicate with one another by recording everything that they wish to share and the application will then transform the context into text and sign language translations.

3. NOVELTY & INVENTIVENESS

G2T is developed to help normal people easily communicate with special people especially mute and deaf people around the world who do not know sign language. This application offers features not present in existing applications by providing a two-way translation function, from sign language to spoken words and vice versa. This offers a more comprehensive and inclusive communication experience.

4. PRACTICALITY & USEFULNESS

G2T is designed to be user-friendly for a wide range of people. It leverages the latest technology to ensure accurate and fast translation, making it a practical tool for everyday communication situations. The uniqueness of this application lies in its ability to connect two distinct language worlds, opening up more inclusive communication opportunities.

By harnessing modern technology, this app provides a valuable tool for those who wish to effectively communicate between deaf and mute individuals and the general population. Its accessibility and user-friendly interface make it highly practical, enabling individuals to engage

in real-time conversations through text or sign language translations. The app's usefulness lies in breaking down communication barriers, fostering inclusivity, and promoting understanding between normal people, mute and deaf communities.

G2T also aligns with the United Nations Sustainable Development Goals, particularly Goal 10, which seeks to reduce inequalities, and Goal 4, which aims to ensure inclusive and equitable quality education (www.un.org/sustainabledevelopment, 2018). By facilitating communication and inclusion for deaf and mute individuals, G2T helps advance these goals. Furthermore, the application supports government policies promoting accessibility and equal opportunities for individuals with disabilities, contributing to a more inclusive society. Through its innovative approach to bridging communication gaps, G2T significantly improves social interactions, educational opportunities, and workplace inclusivity, enhancing the overall quality of life for all parties involved.

5. CONCLUSION

In conclusion, the G2T application offers a groundbreaking solution to the communication challenges faced by deaf and normal individuals. By providing a user-friendly interface and utilizing cutting-edge technology, it enables smooth two-way communication between deaf and normal individuals. The app not only bridges linguistic gaps but also promotes understanding, empathy, and meaningful connections. Its practicality and usefulness lie in breaking down communication barriers, fostering inclusivity, and ensuring that all individuals have the opportunity to express themselves and engage in deep, meaningful discussions. Overall, the G2T app is a valuable resource that promotes accessibility and inclusivity for the deaf community and facilitates effective communication between individuals of all abilities.

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