

25
TAHAP
1999-2024
UITM SEBUAH UNIVERSITI



UNIVERSITI
TEKNOLOGI
MARA

20 & 21
MAY
2024



International Industrial Revolution 4.0 Exposition

"INNOVATING IDEAS, TRANSPIRING DREAMS"

ABSTRACT BOOK

Strategic Partners:



Perpustakaan
Sultan Badlishah

Organized By:

**COLLEGE OF COMPUTING, INFORMATICS AND MATHEMATICS,
UNIVERSITI TEKNOLOGI MARA, KEDAH BRANCH**

UiTM *di haduku*

لويها فتوى موليا



<https://kedah.uitm.edu.my/>



<https://www.facebook.com/RakitoriKdhu>

<https://www.facebook.com/UITMSPKerbok>



UITM Cawangan Kedah Channel

Copyright @ 2024 by Universiti Teknologi MARA Kedah Branch.

Published by College of Computing, Informatics and Mathematics,
Universiti Teknologi MARA Kedah Branch.

All rights reserved. No part of this publication may be reproduced, copied, stored in any retrieval system or transmitted in any form or by any means, electronic, mechanical. Photocopying, recording or otherwise, without the prior permission from the Rector, Universiti Teknologi MARA Kedah Branch, 08400 Merbok, Kedah, Malaysia.

The views, opinions and technical recommendations expressed by the contributors are entirely their own and do not necessarily reflect the views of the Faculty of the University.

Copy Editors: Mohd Zhafri Mohd Zukhi
Shahida Farhan Zakaria
Norin Rahayu Shamsuddin
Nor Athirah Mohd Zin
Khairul Adilah Ahmad

Cover Design: Syahrini Shawalludin
Jasmin Ilyani Ahmad

IREx 2024

The successful inauguration of IR4.0 Exposition IREx 2019 has witnessed ground breaking initiatives, ideas, and innovations materialised into numerous practical devices today. Treading on the same triumph, the College of Computing, Informatics, and Mathematics, UiTM Kedah is thrilled to announce the continuation of said event, IREx 2024 with the theme: *Innovating Ideas, Transpiring Dreams*.

The IREx 2024 aspires to incorporate even more exciting new technologies including, but not limited to, Information & Communication Technology (ICT), Educational Technology & Innovation (ED), Operational Excellence (OE), Internet of Things (IoT), Process Improvement, Ideas & Design, Multimedia, and Electronics that will chart new milestones in human history. This will serve as an excellent platform for scientists and innovators alike to meet the like-minded individuals and showcase inspiring ideas and notable innovations.

PROGRAM SCHEDULE

International Industrial Revolution 4.0 Exposition (IREx 2024)
21ST May 2024 (Tuesday)
Dewan Perdana, UiTM Kedah Branch

TIME	EVENT
8.00 – 9.00 am	Registration & Booth Set Up
9.00 am – 12.00 pm	Exhibition & Judging Session
12.00 pm – 2.00 pm	Obedient Drone Session & Break
2.00 pm – 5.00 pm	Official Closing & Prize Giving Ceremony
5.00 pm	Program Ends

Official Closing Ceremony

International Industrial Revolution 4.0 Exposition (IREx 2024)

TIME	EVENT
2.00 pm	Arrival of Guests and Participants
2.30 pm	Arrival of VVIP
	National anthem - Negaraku And Wawasan Setia Warga
2.40 pm	UiTM
	Welcoming Speech
3.00 pm	Rector's Welcoming Speech
	Officiating Speech
3.10 pm	Gimmick & Montage presentation
3.30 pm	Prize Giving Ceremony
4.00 pm	Photography
5.00 pm	Program Ends

IRX085	TURMERIC HERBAL SLEEP PATCH: A PROMISING INTERVENTION FOR OBSTRUCTIVE SLEEP APNEA IN BOARDING SCHOOL STUDENTS TUPAC	49
IRX086	JUMANJI-SCIENCE GAMEBOARD	50
IRX087	SAIDINA: WW II (WORLD WAR II)	51
IRX088	SMART FOOD WASTE COMPOSTER (SFWC)	52
IRX090	VIRO – VIRTUAL REALITY OUTREACH	53
IRX094	TRAPPO ECO ACTIVATED CARBON FILTER PAPER	54
IRX098	REVOLUTIONIZING SCHOOL ENERGY MANAGEMENT WITH AI-POWERED LIGHTING SOLUTIONS	55
IRX101	EFFECTIVE MICROORGANISM: SUSTAINABLE DISINFECTANT	56
IRX102	NATURAL SMART FERTIGATION SYSTEM	57
IRX104	CLASSROOM WIRELESS FIRE MONITORING	58
IRX106	MELIPONI-TECH	59
IRX107	BOX KID PUZZLE	60
IRX108	SCIENCE SHOOTER	61
IRX109	GHOST MATH GAME	62
IRX110	ANIMAL WORLD QUIZ	63
IRX111	HUNGRY CAT	64
IRX112	INTERACTIVE MATH GAME	65
IRX115	SMART STICK	66
IRX116	ONLINE ATTENDANCE FORM (OAF)	67
IRX120	MULTIUSO LWC: SMART LIGHTWEIGHT MULTI-PURPOSE COMPACT FLOOD RESCUE BOX WITH INTEGRATED LIVE TIME WARNING SYSTEM	68
IRX122	SACCHETTO NATURALE: UTILIZATION OF RICE HUSK, LEMON GRASS, KAFFIR LEAVES, BANANA TRUNK, AND TAPIOCA STARCH IN POLYBAG FABRICATION FOR PLANTATION PURPOSES	69
IRX123	HARMONYLICIOUS FISH FOOD	70
IRX124	VIANETIC: AN AFFORDABLE NON-INTRUSIVE TRAFFIC-INDUCED ALTERNATIVE ENERGY SOLUTION	71

CATEGORY C

IRX002	AUGMENTED REALITY FOR LEARNING CRYSTAL STRUCTURES: INTERACTIVE MATERIAL SCIENCE LESSONS	73
IRX003	NOISE INDUCED HEARING LOSS PREDICTION MODEL USING SUPPORT VECTOR MACHINE	74
IRX004	SMART TAHSIN	75
IRX009	PET CARE SERVICE APPLICATION	76
IRX014	SMART ATTENDANCE SYSTEM WITH REAL-TIME FACE RECOGNITION	77
IRX016	KAWALAN DIGITAL LAMPU BILIK ASRAMA MELALUI INTEGRASI SMART WI-TAG INTERNET OF THINGS	78
IRX022	SMART WATER MANAGEMENT SYSTEMS	79
IRX023	KEDAH PRICE CATCHER	80
IRX024	CAR CHILD SAFETY KIT: NAKSAFE	81
IRX028	BIODIVERSITYCANVAS: A DASHBOARD OF ANIMAL, PLANT, AND FUNGI TAXONOMY IN MALAYSIA	82
IRX029	MyPredictC: COVID-19 PREDICTION	83
IRX037	SEMAI (SMART ELECTRONIC MONITORING & AGRICULTURAL INVENTION	84
IRX038	SMART CLOTHES HANGER SYSTEM	85
IRX040	PARCELPAL: CAMPUS PICKUP PRO	86
IRX041	CLINICCONNECT	87
IRX044	ELECTRONIC PERFORMANCE INDICATOR FOR CAMPUS RESEARCH INTEREST GROUP (e-piCRIG)	88
IRX045	CHAWNOW: FOOD DELIVERY SYSTEM	89
IRX046	DYNAMIC EXRATE: UNVEILING INSIGHTS INTO CURRENCY CIRCULATION AND EXCHANGE RATES IN THE DIGITAL AGE THROUGH BIG DATA ANALYSIS	90
IRX047	KMC-i APPOINTMENT	91
IRX048	RENTSIGHT: VISUAL INSIGHT INTO KL & SELANGOR RENTAL TRENDS	92
IRX049	EMPOWERING AGRICULTURE WITH SOIL NUTRIENT PREDICTIONS: A DATA-DRIVEN APPROACH	93
IRX050	INNOVATION OF THE SMART CATERING HEALTHY (CATHY) APPLICATION TO SUPPORT TODAY'S HEALTHY LIFESTYLE	94
IRX055	PARCEL MANAGEMENT SYSTEM	95
IRX058	REAL-TIME DROWSINESS DETECTION USING COMPUTER VISION	96

CATEGORY C

REAL-TIME DROWSINESS DETECTION USING COMPUTER VISION

Marha Midhatiey binti Rusli¹, Khairul Adilah binti Ahmad²

¹ *Gwangju Institute of Science & Technology (GIST), 123 Cheomdangwagi-ro, Buk-gu, Gwangju, South Korea*

marhamidhatiey@gmail.com

^{2,3} *College of Computing, Informatics and Mathematics, University Teknologi MARA, Cawangan Kedah, 08400 Merbok, Kedah, Malaysia*

adilah475@uitm.edu.my

ABSTRACT - Drowsiness poses a significant risk across multiple domains, including transportation, learning, healthcare, and industrial sectors. Addressing this critical issue requires the development of an effective drowsiness detection system paired with robust alertness assessment mechanisms. In this project, we utilize cutting-edge technologies such as machine learning, computer vision, and signal processing to offer real-time detection and mitigation of drowsiness-related risks. Webcam offers a cost-effective means for real-time monitoring and detecting drowsiness. Our approach introduces an innovative method focusing on the classification of eye states using transfer learning and computer vision techniques. Leveraging the MRL Eye Dataset, our method trains a system to identify the eye state of a driver through webcam-based monitoring. The proposed system demonstrates robustness in detecting drowsiness, accommodating both eyeglass wearers and varying lighting conditions, with an impressive accuracy rate of 97% and low computational complexity. This project represents a significant advancement in drowsiness detection technology, providing a real-time, cost-effective, and accurate solution that can be seamlessly integrated into vehicles to promote safer transportation for all. Moreover, our solution is adaptable and customizable to meet the unique requirements of various applications and industries. Through collaboration with partners and stakeholders, we aim to deploy our drowsiness detection technology in commercial vehicles, healthcare facilities, and industrial workplaces, thereby advancing safety and efficiency on a global scale.

Keywords: Drowsiness detection, eye state, computer vision, transfer learning, Convolution Neural Networks



Organized By:

**COLLEGE OF COMPUTING, INFORMATICS AND MATHEMATICS,
UNIVERSITI TEKNOLOGI MARA, KEDAH BRANCH**