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2024



International Industrial Revolution 4.0 Exposition

"INNOVATING IDEAS, TRANSPIRING DREAMS"

ABSTRACT BOOK

Strategic Partners:



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Sultan Badlishah

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

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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

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CATEGORY C

AUGMENTED REALITY FOR LEARNING CRYSTAL STRUCTURES: INTERACTIVE MATERIAL SCIENCE LESSONS

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ABSTRACT - Augmented Reality (AR) is revolutionizing education by combining real-world information with computer-generated content, enhancing user perception, interaction, and engagement, offering a dynamic and engaging approach beyond traditional methods. According to recent research, a significant number of engineering students encounter difficulties in comprehending material structure, particularly crystal structure, due to challenges in visualization. Thus, this project focuses on providing aid to improve the understanding of material structure using augmented reality. SolidWorks software is used to create the crystal structure models, incorporating the distinct properties of pure aluminum and carbon steel. This model is then seamlessly integrated into Unity software and displayed on model targets representing the chosen materials, facilitating the seamless blending of virtual and real-world applications. Vuforia software is utilized to provide different method of recognition through camera. As a result, the mobile application 'Crystal View' (version 1.0) has been created, designed for smartphones. The application provides a mixed reality experience, allowing the crystal structure to be displayed in real-time along with additional information. An interactive interface is designed to enable users to explore unit cell within the crystal structure. In conclusion, the developed mobile application will enhance students' understanding of crystal structure and increase their enthusiasm for material science, particularly in the crystal structure solely using their personal smartphones.

Keywords: Augmented reality, crystal structure, material science.



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