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UiTM SEBUAH UNIVERSITI

UNIVERSITI TEKNOLOGI MARA

20 & 21 MAY 2024

IRAX

International Industrial Revolution 4.0 Exposition

"INNOVATING IDEAS, TRANSPIRING DREAMS"

ABSTRACT BOOK

Strategic Partners:

UST

Perpustakaan Sultan Badlishah
UNIVERSITI TEKNOLOGI MARA

Organized By:

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 practival 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
2.40 pm	National anthem - Negaraku And Wawasan Setia Warga UiTM
3.00 pm	Welcoming Speech Rector's Welcoming Speech
3.10 pm	Officiating Speech Gimmick & Montage presentation
3.30 pm	Prize Giving Ceremony
4.00 pm	Photography
5.00 pm	Program Ends

CATEGORY A

CATEGORY B

CATEGORY B

ADVANCING MICROPLASTIC DETECTION IN WATER SYSTEMS USING SEM IMAGING AND AI ANALYSIS

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ABSTRACT- The presence of microplastics in aquatic environments is a growing environmental concern, threatening both ecosystem health and human safety. Traditional detection methods for microplastics are often hampered by poor precision and lack of scalability. Existing techniques for identifying microplastics in water are inadequate due to their limited accuracy, efficiency, and scalability. Given the widespread nature of microplastic pollution, there is a pressing need for more effective detection methods that can operate across various water bodies. We propose a novel method for microplastic detection that combines Scanning Electron Microscopy (SEM) with Artificial Intelligence (AI) technologies. This approach aims to significantly improve the precision, efficiency, and scalability of microplastic identification processes. Our process includes collecting water samples, which are then prepared for SEM to obtain high-resolution images of microplastics. These images undergo preprocessing to enhance clarity and reduce noise, followed by manual annotation to create a training dataset for an AI model. The model, which employs advanced convolutional neural networks (CNNs), is then trained, and validated for accuracy in detecting microplastics. The developed methodology offers a reliable solution for the accurate and scalable detection of microplastics in water systems. This advancement will aid in better understanding the distribution and impact of microplastic pollution, ultimately supporting the development of informed policies and management strategies to address this global environment.

Keywords: Microplastics, Detection, Scanning Electron Microscopy, Artificial Intelligence, Pollution

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