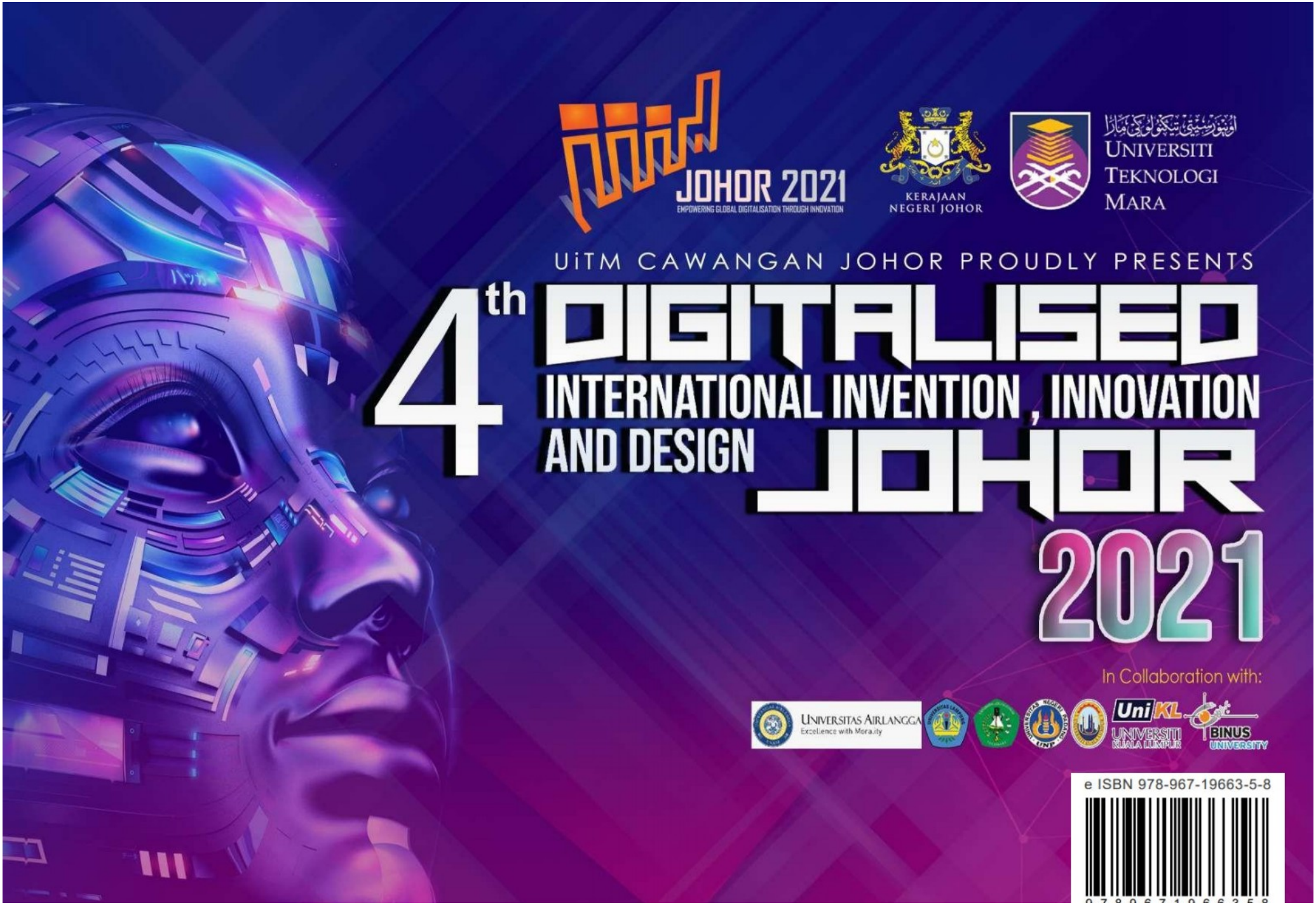

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PREFACE

This ebook is the report for the 4th Digitalised International Invention, Innovation, and Design (DIIID) Johor 2021. For the past 11 years, UiTM Cawangan Johor has organised Invention, Innovation and Design Competitions (IID) at both national and international levels. This year, UiTM Cawangan Johor maintains its pre-eminence because of the encouraging participation from prior sessions. The incorporation of digital online features changed the ambiance of traditional IID with physical booth exhibition-style, which is in line with the aim of the Ministry of Education to transform learning effectively and living productively in the digital world. The 4th Digitalised International Invention, Innovation, and Design (DIIID) Johor 2021 begun from 20th February 2021 until 3rd August 2021, with an overall total of 131 projects. The projects revolve around issues that are encompassing the following areas of research: Science and Technology and Social Science from international and local universities, government agencies, and schools (primary and secondary). This ebook is hoped to give memories to all the participants this year and expected to promote the culture of innovation and creativity at the national level. Moreover, to contribute the generation of new ideas and products commercialisation.

89	Science & Technology Level A: Professional Level	**Siti Nor Zawani Ahmmad[1], Mohamad Rashid Abd Razak[2], Mohd Faizul Roslan[3], Ahmad Adlan Anuar[4], Eileen Su Lee Ming[5]** [1,2,3,4]Universiti Kuala Lumpur MITEC, Johor (MALAYSIA) [5]Universiti Teknologi Malaysia, Johor (MALAYSIA)	Sensor-Based System for Surgical Skill Assessment
109	Science & Technology Level A: Professional Level	**Rahadian Z[1], Muhammad Adri[2], Sriadhi[3], Khaerudin[4], Neny Wahyuningtyas[5]** [2]Jl Prof. Dr Hamka, Air Tawar Barat, Padang, West Sumatera (INDONESIA) [3]Jl. Wiliam Iskandar Ps. V, Kenangan Baru, Kec. Percut Sei Tuan, Kab. Deli Serdang, North Sumatera (INDONESIA) [4]Jl. Rawamangun Muka Raya No. 11, RW. 14, Rawamangun, Kec. Pulo Gadung, East Jakarta (INDONESIA) [5]Jl. Semarang No. 5, Sumbersari, Kec. Lowokwaru, Malang, East Java (INDONESIA)	Kuliah Smart: Educational Innovation and Digital Marketing in The Disruptive Era
12	Science & Technology Level A: Professional Level	**Zaharah Johari, Muhamad Hairi Sulaiman, Mohd Fairus Mohd Yusoff** Universiti Teknologi Malaysia, Johor (MALAYSIA)	Visitor Monitoring System for Smart Building Application
141	Science & Technology Level A: Professional Level	**Syah Runniza Ahmad Bakri, Noriham Bujang, Juliza Salleh, Anniza Hamdan, Aidil Azli Alias** Universiti Teknologi MARA, Cawangan Sarawak, Kampus Samarahan (MALAYSIA)	The Pirate Continuity Correction (CC)
72	Science & Technology Level A: Professional Level	**ASHRAF ROHANIM ASARI, MUHAMMAD AINUL HAYAT OSMAN, ERNIE MAZUIN MOHD YUSOF, MOHD ALIFF AFIRA HJ SANI** Universiti Kuala Lumpur (MITEC), Johor (MALAYSIA)	Container Monitoring System In Logistic Application
16	Science & Technology Level B: Tertiary Level	**Muhammad Arif Nor Sharizan, Muhammad Aiman Alif Rosman, Muhd Azhar M Ikhsan, Surayya Abu Bakar, Nurulnatisya Ahmad** Universiti Teknologi MARA, Cawangan Johor, Kampus Pasir Gudang (MALAYSIA)	Mechanical Trolley
59	Science & Technology Level B: Tertiary Level	**Muhammad Shafique Ashroff Md Nor, Mohd Aliff Afira Hj Sani, Ahmad Raziq Mirza, Mohd Ismail Yusof, Ashraf Rohanim Asari** Universiti Kuala Lumpur (MITEC), Johor (MALAYSIA)	Development Of Low-Cost Bio-Inspired Swimming Robot (SROB) With IOT
77	Science & Technology Level B: Tertiary Level	**Muhammad Shafiq Saruddin[1], Mohd Aliff Afira[2], Nik Ahmad Nizam Nik Malek[3], Mohd Ismail Yusof[4], Nor Samsiah[5]** [1,2,4]Universiti Kuala Lumpur (MITEC), Johor (MALAYSIA)	Development Of Alcohol Distillation Plant

		[3]Universiti Teknologi Malaysia, Cawangan Johor, Kampus Pasir Gudang (MALAYSIA) [5]Universiti Kebangsaan Malaysia (MALAYSIA)	
79	Science & Technology Level B: Tertiary Level	**Ahmad Syamim Aminuddin[1], Mohd Aliff Afira[2], Mohd Ismail Yusof[3], Sairul Izwan Safie[4], Nor Samsiah[5]** [1,2,3,4]Universiti Kuala Lumpur (MITEC), Johor (MALAYSIA [5]Universiti Kebangsaan Malaysia, Selangor (MALAYSIA)	MRAI Robot
83	Science & Technology Level B: Tertiary Level	**Mohammad Ismail Mohd Nasir, Noor Wahida Jamil, Nur Syuhada Muhammat Pazil, Nurul 'Azwa Kamarudin** Universiti Teknologi MARA, Cawangan Melaka Kampus Jasin (MELAKA)	Workshop Inventory Management System
85	Science & Technology Level B: Tertiary Level	**Zulfakhri Zulkafli, Norzainul Ariffin Norjaip, Tuan Aziem Amrie Tuan Saiden, Fatin Farhah Abd Aziz, Mazleenda Mazni** Universiti Teknologi MARA, Cawangan Johor, Kampus Pasir Gudang (MALAYSIA)	EZCARE Wheelchair
91	Science & Technology Level B: Tertiary Level	**Muzdalifah Ismail, Wan Adilah Wan Adnan, Nor Hapiza Mohd Ariffin, Zan Azma Nasruddin** Universiti Teknologi MARA, Shah Alam (MALAYSIA)	E-Didik Solat Check Reward Gamification App
93	Science & Technology Level B: Tertiary Level	**Adam Nazri Aizan, Maizatul Akmar Ashari, Nur Ainin Sofiya Hilmy, Rohani Mohamad Khalid, Ahmad Idzwan Yusuf** Universiti Teknologi MARA, Cawangan Johor, Kampus Pasir Gudang (MALAYSIA)	SSA - Site Safety Assistant
121	Science & Technology Level B: Tertiary Level	**Nur Ain Zulaikha Jamaluddin, Azma Melia Jafri, Zahidah Zulkifli** International Islamic University Malaysia (MALAYSIA)	Cybersecurity Awareness Mobile App for Secondary School Students: LetSecure
122	Science & Technology Level B: Tertiary Level	**Mohammad Tahmid Lodi, Mujib Mehran, Zahidah Zulkifli** International Islamic University Malaysia (MALAYSIA)	EBazaar IIUM
140	Science & Technology Level B: Tertiary Level	**Muhammad Faris Ahmad Sabri, Muhammad Luqmanul Hakim Sa'ari, Nurul Nuha Abdul Molok** International Islamic University Malaysia, Selangor (MALAYSIA)	Secure Expense Manager: A Mobile Application for Managing Expenses
144	Science & Technology Level B: Tertiary Level	**Fazlinashatul Suhaidah Zahid, Mohamad Syukri Mohamad Nizam, Mohamad Nazim Nasiruddin, Muhammad Aiman Samsul Anuar, Nor Diyana Md. Sin** Universiti Teknologi MARA, Cawangan Johor, Kampus Pasir Gudang (MALAYSIA)	Smart Luggage for Smart Traveller

			Acceptance has been conducted with the positive results from the two of the target users which are the counsellors and the student. The suggestion such as to put the bilingual in the application to make it easy for the students. For the future plan, this application can be implemented to other schools in Malaysia. This application also in lines with the sustainable development goals which are Quality education and Sustainable Cities and Communities.
122	**Mohammad Tahmid Lodi, Mujib Mehran, Zahidah Zulkifli** *International Islamic University Malaysia (MALAYSIA)*	**EBAZAAR IIUM**	In recent research conducted by Bangladesh Agricultural University, it is found that about RM 3.6 billion worth of fruits and vegetables perished in a single session. Another report by Jahangirnagar University stated that up to 40% of harvested products especially fruits and vegetables have perished. This huge loss occurred due to the lack of post-harvest facilities and a lack of storage systems. The purpose of the e-Bazaar application is to create an online platform for farmers and agri-businessmen to sell their harvest and other food items through this e-commerce system and provide a new business model. On the other hand, the buyers are getting an online system to buy their daily groceries and food items online. For the development of the system, System Development Life Cycle, (SDLC) methodology had been implemented to acquire a clear understanding of the processes throughout the project. Farmers, agri-businessmen, and existing online system's business owners had been interviewed and surveys were carried out to obtain their feedback and needs. For the development phase, the researchers carried out the MERN stack technologies to develop the system. The MERN stack consists of 4 technologies which are MongoDB, Express, React Native, Node.js (MERN). E-Bazaar can create a new platform for farmers and businessmen to conduct their business. It will create a new scope for the farmers to sell their products in bulk and small quantities to a wider range of customers. Many people might get encouraged in this business since people will not require a physical shop and can start the business with small capital. This will create job opportunities and more business opportunities for people in Bangladesh and can be applied in other countries as well.
123	**Tan Kim Loong, Kamilah Jaffar, Amalia Aida Abdul Halim, Norhashimah Mohd Saad, Abdul Rahim Abdullah** *Universiti Teknikal Malaysia, Melaka (MALAYSIA)*	**IoT COVID-19 MEDICAL TROLLEY (TroVid 2.0)**	Currently the world is fighting with a heavy pandemic COVID-19. In Malaysia, there are certain hospitals that dedicated to take care of COVID-19 patient. For patient with a low-risk symptom, every state has their own Low-Risk Patient Quarantine Treatment Center (CPRC) such as MAEPS in Serdang, Dewan Perbadanan in Labuan and Melaka International Trade Centre in Malacca. The motivation of this project is initiated by the following problems. In these Low-Risk Treatment Center (CPRC), the front liners need to distribute things such as food, medicine, and cloths to patients manually by using trolleys. They need to be ready with full Personal Protective Equipment (PPE) and have a high risk of infection with COVID-19. Hence, this Covid19 Medical Trolley (TroVid 2.0) was design to solve issue which is to create a minimum contact as possible between the front liners and patients. The proposed system is implemented for automatic trolley movement using Arduino Uno R3. The invention provides an automatic medical surgical trolley which comprises automatic guidance, a wireless controller, an obstacle avoiding detection device, an IP camera, a trolley, an integrated power supply and a processor. The wireless remote drives the trolley to move forwards and backwards. Last but not least, we expect this product to reduce the front liners daily task.
124	**Muhamad Hilmi Hasnan, Rohaina Jaafar, Nurul**	**CARBON MONOXIDE**	Nowadays, the incidence of carbon monoxide (CO) gas leakage in vehicles has increased. The leaking of the vehicle exhaust system will lead to a high risk and harm to humans. Hazardous gas can affect