

## INNOVATION PITCH & BUSINESS MATCHING (IPBM 2019) - DIGITAL TECHNOLOGY, ELECTRONICS AND IOTS

NO	MAIN RESEARCHER	UNIVERSITIES	NAME OF INVENTIONS	DESCRIPTION OF INVENTIONS	TECHNOLOGY CATEGORY	INVENTION STATUS
1	Mohd Hafiz bin Arshad	Universiti Malaysia Perlis (UniMAP)	Smart Pharmaceutical Temperature Monitoring System (VDSM 1.2)	Temperature monitoring for refrigerated pharmaceutical inventories is vital to make sure the medicine is safe for community health. Conventional practice in monitoring temperature sensitive inventories by paper recording is cheap, however labour intensive, unreliable and gives data gap which may lead to pharmaceutical waste. VDSM 1.2 offers real-time IoT-based web monitoring, complete with alerting notification and alarm to solved the problem. This system is made affordable compare to existing product in the market targeting for SME healthcare businesses.	Digital Technology, Electronics and IOTs;Biotechnology, Medical Device, Pharmaceuticals and Health	READY TO COMMERCIALISED

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2	Muhammad Zaid bin Aihсан	Universiti Malaysia Perlis (UniMAP)	Inverter Teaching Module	<p>This product can be use to teach students the topic in Electrical Engineering especially in Inverter Topic in Power Electronic syllabus. This device is a simplified version of inverter laboratory in lab, where the students can use the product to study the inverter topic and understand the topic with a lesser time needed. This product can solve the inverter studies between Bipolar switching and Unipolar switching studies and its also covered multiple inductor selection towards LC filter performance. From this device the students can easily generate the graph of the result within less than seconds and it can product up to 40 different graphs and results.</p>	Digital Technology, Electronics and IOTs	PROTOTYPE
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3	Nor Zaiazmin Bin Yahaya	Universiti Malaysia Perlis (UniMAP)	ATTENDANCE SYSTEM USING FACE RECOGNITION	The face recognition technology for attendance system is using 68 points face landmarks and it uses open source Python codes that can be easily upgrade and modify based on customer needs. The developed system can achieved 97.5% accuracy based on 5 picture samples per person. It is capable to recognize faces less than 3 seconds and can store up to 1,000 specific faces in its database.	Digital Technology, Electronics and IOTs	PATENT/READY TO COMMERCIALISED
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4	Dr. Zul-Atfi Bin Ismail	Universiti Malaysia Perlis (UniMAP)	Integrated Computerised Maintenance Management System (I-CMMS) Development for Precast Concrete Buildings	The Integrated Computerised Maintenance Management System (I-CMMS) for Pre- cast Concrete Buildings is designed to overcome current issues on labour intensive and knowledge transfer between construction team members (consultant, engineer and technician). This prototype focuses on automatic bidirectional communications between Expert System and BIM on a database level. The product can be divided into three main components, which are CMMS, Expert System and BIM software (Autodesk Revit application). Each component plays a different role in the system. CMMS provides the information of inventory component and defect status while the Expert System is	Digital Technology, Electronics and IOTs	PATENT/READY TO COMMERCIALISED
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				<p>considered as a decision-making tool and to be a comprehensive computerised system that gives recommendations on IBS component diagnosis of concrete structures. This process is used to present the user for selecting one of the three knowledge bases namely leaking, jointing and cracking in concrete including the selection of appropriate construction design or materials and repairs method recommendations. The BIM database is developed to provide technology transfer of knowledge from specialists to other practitioners and vice versa and it provides a common forum for communication between consultants and engineers. Therefore, it is a useful guide to everyone who</p>		
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				<p>deals with IBS structure component of building defects. It is an excellent first hand reference guide for a wide range of structure design defect risk leading to accurate analysis using design condition index with coupled to an independent computerised expert system. Adoption of the approaches suggested in the research will enable the system to achieve the maintenance operation visualisation, information automation and multi-collaborative participation, which can effectively promote the development of zero IBS building maintenance.</p>		
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5	Dr. Nurulisma Ismail	Universiti Malaysia Perlis (UniMAP)	Voice Based Application System to Learn Reciting Al-Quran for Autism Children (VB-QURAN-AUT)	<p>The children with Autism Spectrum Disorder (ASD) or autistic children are usually diagnose by the disturbances in the following domains: social relatedness, communication/play, and restricted interests and activities. As a result, interacting and communicating with autistic children are quite difficult because of their lack in verbal and nonverbal communication skill. Due to that, the autistic children are also find difficulties in learning. A method of learning for the autistic children is relatively different than the normal children. The traditional learning method requires them to face directly to the teacher. Hence, there are a lot of apps have been designed to improve communication and interaction skill</p>	Digital Technology, Electronics and IOTs	READY TO COMMERCIALISED
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				<p>among autistic children for learning but none of them is specific to Al-Quran learning. Therefore, the objectives of this research are to develop and evaluate the usability of a voice based application system (VB-QURAN-AUT) as the assistive tool to facilitate the autistic children learning reciting Al-Quran. The apps can be played on the smart phone since it is a portable device that enables the autistic children to learn reciting Al-Quran at anytime and anywhere. Thus, the VB-QURAN-AUT is developed on the Android platform that based on user-oriented approach in order to facilitate them to learn reciting Al-Quran. The methodology used in the development of VB-QURAN-AUT is Agent</p>		
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				<p>Oriented Programming (AOP) that based on the Iterative-Evolution System Development Life Cycle Model (IE-VB-QURAN-AUT. The evaluation of VB-Quran-AUT relies on four (4) of usability constructs: learnability, efficiency, usability error, and user satisfaction. These four (4) usability constructs support the findings of the usability of VB-QURAN-AUT to be an assistive tool that can facilitate the autistic children learning reciting Al-Quran efficiently.</p>		
6	muhammad izuan fahmi romli	Universiti Malaysia Perlis (UniMAP)	GREEN ELECTRIC VEHICLE (EV) USING SUPERCAPACITOR AS MAIN ENERGY SOURCE	<p>New circuit balancing to balance the voltage and current. To make sure all capacitor voltage in same voltage to supply to the load. Automatic shift level the voltage input to another output voltage demand. Overvoltage and Reverse Voltage</p>	Digital Technology, Electronics and IOTs	READY TO COMMERCIALISED

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				Protection. Fast charging and long term used.		
7	Asmala bin Ahmad	UNIVERSITI TEKNIKAL MALAYSIA MELAKA (UTeM)	Multispectral Remote Sensing System for Oil and Gas Exploration	Satellite remote sensing suffers from limited and fixed spatial, temporal and spectral resolution. To overcome these issues, we developed a novel drone-based multispectral remote sensing system with high and customisable spatial, temporal and spectral resolution. It consists of a quadcopter UAV, a smartphone and a laptop. During operation, the UAV can navigate autonomously and can be tracked in real-time. It is mounted with a camera that operates in multispectral wavelengths. Oil detection is carried out by making use of vegetation index to detect vegetation health condition due to	Digital Technology, Electronics and IOTs	PROTOTYPE

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				absorption of hydrocarbon by vegetation roots.		
8	Mohd Hafiz bin Zakaria	UNIVERSITI TEKNIKAL MALAYSIA MELAKA (UTeM)	Sistem Penilaian Kebolehbacaan Bahasa Melayu (SPIKE)	The first online tool to measure the readability level of a Malay text. SPIKE extracts potential difficult words from malay text and generates a Readability Score to match with reader's age level. SPIKE warns readers with reading difficulties using colour coded system	Digital Technology, Electronics and IOTs	READY TO COMMERCIALISED
9	Noor Azwan Bin Shairi	UNIVERSITI TEKNIKAL MALAYSIA MELAKA (UTeM)	RECONFIGURABLE AND INTEGRATED MICROWAVE BANDPASS FILTER WITH NOTCHED BAND FOR WIRELESS APPLICATIONS	This product is a new design of a reconfigurable and integrated microwave bandpass filter with a notched band to exhibit bandpass and notch response simultaneously in a single device. This device consists of band-pass response that is operating in wideband spectrum (3	Digital Technology, Electronics and IOTs	PROTOTYPE

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				<p>GHz – 6 GHz) and notch response that is operating at 5.2 GHz. The potential applications are for modern technology such as ultra-wide-band (UWB), satellite, and cellular radio system that requires flexibility to support a very large number of standards (e.g., LTE, 5G, WLAN, UWB, Wi-Fi, WiMAX, satellite band, etc.) and also to discriminate the strong interference signals.</p>		
10	NOOR MOHD ARIFF BIN BRAHIN	UNIVERSITI TEKNIKAL MALAYSIA MELAKA (UTeM)	LEARN WITH IMAN APP	<p>Educational mobile application offers opportunity to stimulate children’s mind in a fun way. However, children also need to actively explore their environment. Studies show children learn faster with interactive application. But, so-called interactive application mostly contains passive activities, like repetitive</p>	Digital Technology, Electronics and IOTs	PROTOTYPE

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				swiping. Learn With Iman, enables true interactive learning session where children will not only interact with mobile device but also their environment to learn new things. Artificial Intelligents enable design of small size application, with fast, accurate and secure on-device image classification.		
11	Nur Diyana Kamarudin	UNIVERSITI PERTAHANAN NASIONAL MALAYSIA (UPNM)	iNavig: Smart Item Locator using BLE	The current approach to search for an item in shopping mall, retail stores or even warehouses is mostly manual processes and does not provide any assistance for the users to track the item's location on the shelf. iNavig system is designed as a smart item locator equipped with user-friendly mobile application and integrated Beacon Bluetooth Low Energy (BLE) technology sensors to provide	Digital Technology, Electronics and IOTs	PROTOTYPE/ READY TO COMMERCIALISED

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				necessary inventory information of the item on the shelf, assists and navigates the users to the desired item's location/shelf.		
12	SYED NASIR ALSAGOFF	UNIVERSITI PERTAHANAN NASIONAL MALAYSIA (UPNM)	VFORS: VEHICLE FORENSICS RECORDING SYSTEM	VFORS is a multiple clients to server system that can log the vehicle's SPEED, LOCATION, DIRECTION, TILT, ROLL, TOTAL ACCELERATION using a low cost Android device as the logger. Data collected can be used for accident forensic analysis before, during and after the accident. Beyond accident analysis, the collected data can be used for breakdown, traffic, road, fuel consumption and driving behavior analysis.	Digital Technology, Electronics and IOTs	READY TO COMMERCIALISED

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13	Mohamed Tarmizi Bin Ahmad	UNIVERSITI PERTAHANAN NASIONAL MALAYSIA (UPNM)	Advance Satellite Tracking System (ASTS)	<p>The Advance Aircraft Satellite Tracking system (ASTS) uses the power of GNSS (Global Navigation Satellite Systems), and the versatility of chip 9 axis inertia measurement unit, and the communications capabilities of Satellite Communications, GSM 3G/2G Communications as well as WiFi communications for the purposes of implementing a tracking and safety management, Search and Rescue and Early Warning system for aircrafts. Data from various inputs, which includes but is not limited to GNSS, chip 9 axis inertia measurement unit (IMU) are continuously processed and analyzed by artificial intelligence algorithms in the device and server computers to determine</p>	Digital Technology, Electronics and IOTs	READY TO COMMERCIALISED
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				<p>everything from when data is to be transmitted until whether an emergency is imminent, to the need for maintenance on the aircraft. These information and alerts are then sent via the various encrypted communications channels on a real time (or whenever it can be sent) to be stored in secured servers and to alert relevant personnel monitoring the progress of the aircraft as it flies. Data is stored in these secured servers and also in storage mediums (for example Memory cards) on the device as a backup to what has been sent to the secured servers.</p>		
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14	Roslan Umar	Universiti Sultan Zainal Abidin (UniSZA)	UniSZA-Sudden Ionospheric Disturbance (UniSZA-SID) System	<p>UniSZA-Sudden Ionospheric Disturbance (UniSZA-SID) system developed to understand the characteristics of the lower ionospheric layer (60-150km) during space weather events. SID is a condition of sudden high ionization occurred at the lower ionospheric D-region caused by solar activity namely solar flare. UniSZA-SID system is located at ESERI, Universiti Sultan Zainal Abidin, UniSZA (5°19'48.72" N 103°08'26.88" E). The low layer ionosphere is important for submarine communication, ionospheric remote sensing, lightning research and some researcher stressed that lower layer ionosphere can be a precursor to earthquake event. Development of the system is to monitor</p>	Digital Technology, Electronics and IOTs	READY TO COMMERCIALISED
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				<p>the diurnal variation of the lower ionosphere layer and the activity of Solar flare by using Very Low Frequency (VLF) probing technique. The UniSZA-SID system composed of a 1-m antenna, pre-amplifier to amplify the signal, ADC converter and data acquisition system. The optimization of 1-m antenna will develop to receive several frequencies. Due to several issues with manual collection and data archival purposes, this research presents near real-time data monitoring at an established university's website and data archival for the purpose of the data monitoring and data backup. Notably, the data is received using File Transfer Protocol (FTP) and was stored in Google Drive cloud</p>		
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				<p>storage. MATLAB software is used to design and implement UniSZA-SID near real-time data plotting. The data can be viewed on the official website (<a href="http://uniswa-sid.myfik.net/">http://uniswa-sid.myfik.net/</a>). This research introduces a new way to monitor the variation of SID by having a near real-time feed plotting system. With the new system, researchers can monitor directly the event through the internet without having to plot the SID raw data manually.</p>		
15	NORMALA RAHIM	Universiti Sultan Zainal Abidin (UniSZA)	V-UMRAH	<p>Virtual Umrah is an interactive application and it consists of four main components which are contents, virtual reality (VR) technology, multimedia elements and user profile. Virtual reality technique enables this application to provide a realistic experience for</p>	Digital Technology, Electronics and IOTs	READY TO COMMERCIALISED

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				<p>the users in performing â€”Umrah. Whereby the methodology that has been adopted to develop this application is User-Centered design model (UCD) that focuses on involvement of users in every phases. Whereas multimedia elements will provide better visualization for users . The goal of combination UCD, virtual reality technology and multimedia elements is to ensure that a product fulfils the needs and requirements of the intended users. These components are hopefully can be implemented as guidelines to the others to develop an application in virtual environment.</p>		
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16	Prof Madya Dr. Mohamad Razali Abdullah	Universiti Sultan Zainal Abidin (UniSZA)	SMART Measurement kit (SMART-Me Kit)	The conventional method in fitness test currently measuring distance using expensive and large size equipment. Smart-Measurement kit has been produced to overcome this problem. Smart-Me Kit is a portable equipment to measure distance jumped in fitness test. It is easy to use and more practical rather than conventional equipment. It also promising as an effective, low-cost and user-friendly product to all practitioners	Digital Technology, Electronics and IOTs	READY TO COMMERCIALISED
17	MUHAMMAD SHUKRI BIN AHMAD	UNIVERSITI TUN HUSSEIN ONN MALAYSIA (UTHM)	MiXiT STEM Learning Kit	MiXiT STEM Learning Kit modular concept offers flexibility to teachers to design their own "challenges"™ based on their creativity to suit what the outcome they want. Students can also use their own creativity to solved problem presented to them by	Digital Technology, Electronics and IOTs	PROTOTYPE

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				<p>their teachers as parts used are interchangeable across kit set, and reusable. Thus making each activities unique, fresh and interesting.</p>		
18	<p>Ts. MOHD HATTA BIN HJ MOHAMED ALI @ MD HANI</p>	<p>UNIVERSITI TUN HUSSEIN ONN MALAYSIA (UTHM)</p>	<p>ADIK-ADIK JAWI: The Development of Mobile Learning Apps to Enhance Jawi Learning Experience for Preschool Towards Education 4.0</p>	<p>Mobile learning (M-learning) is an educational system that soon will take place the old fashion way, M-learning support by mobile device to ensure a continuous learning process. M-learning enable user to experience learning process anywhere and anytime. Thus, making learning experience more fun with an interaction that engaging learning environment. “Adik-adik Jawi” a Mobile Learning Apps for Preschool students to learn Jawi (Arabic Alphabets) consider several critical success factors such as the use of attractive colour,</p>	<p>Digital Technology, Electronics and IOTs</p>	<p>PROTOTYPE</p>

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				<p>animation, graphic, text and audio in order to optimize the learning engagement. This will allow the learning process becoming more fun and meaningful. It will also embrace the student's skills on critical thinking, problem solving, creativity and many more positive aspects. This application is very important as a social respond to instill patriotism values.</p>		
19	<p>mohd shahrul mohd nadzir</p>	<p>UNIVERSITI KEBANGSAAN MALAYSIA (UKM)</p>	<p>AiRBOX Sense</p>	<p>The specific requirements for our sensing system are reliability and wearability, low-cost, portable, and ease of installation by user. Our system was designed to measure gas pollutants which indexed by Malaysia ambient air quality standards at typical ambient concentrations. In addition, the AiRBOX Sense has 'auto-</p>	<p>Digital Technology, Electronics and IOTs</p>	<p>READY TO COMMERCIALISED</p>

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				<p>calibration' system. This additional unique system has the capabilities to alert the user if the signal output drifted due to the humidity and temperature effects (see figure below). AiRBOX Sense collects, analyze and share air quality data using the Wireless communications. The special Using the IoT scenario allows data to be sent remotely into web server such as the Google drive or Dropbox periodically as well as visualizing numerical and graphical values over time. An Android mobile phone application (Apps) is used to display the data to facilitate users in obtaining information about the air quality data. The special features of this technology is well calibrated and gave</p>		
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				<p>high precision and accurate data compared to others low-cost sensors in the market. In addition the system has 'self-calibrate' mode if the output signal was interfered by meteorological factors such as humidity. The AiRBOX Sense also transmit real-time data via Apps and web-server to the clients. The Apps will give information of the status of air quality and the value of Air Pollution Index (API). The Apps also will give precautions steps to the client based on the API values. This complete sensor and data transfer systems making the AiRBOX will be highly demand in local and international market.</p>		
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20	NORILMI AMILIA BT ISMAIL	Universiti Sains Malaysia (USM)	Innovatif CanSat Kit for Education (i-CaKEd)	<p>Innovative Cansat Kit for Education (i-CaKEd), is developed primarily to aid teaching and learning in Sciences, Technology, Engineering and Mathematics (STEM) education based on aerospace technology towards the Fourth Industrial Revolution. i-CaKEd uses a small-sized pico-satellite to apply the learning of (STEM) and managing of a project. The novelties of i-CaKEd are on Space technology-based teaching and a learning module for STEM education embedded with project management skills and activities for the secondary school. The innovation of i-CAKED is on the capability of the module to provide a peer-learning process through a web-based forum and database</p>	Digital Technology, Electronics and IOTs	READY TO COMMERCIALISED
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				sharing through IoT application. This forum will build a community for CanSat in which encourage knowledge sharing between the community		
21	Bakhtiar Affendi Rosdi	Universiti Sains Malaysia (USM)	Machine Vision Inspection System for Assembly Line in Manufacturing Industry	A machine vision system built using high-resolution industrial camera in conjunction with industrial lens and customized lighting system aimed to inspect object details too small to be seen by the human eye. An internally develop customized deep learning algorithm takes a known set of input data and known responses to the data (output) and trains a model to generate reasonable predictions for the response to new data. The product is compact, suitable for in-situ inspection, easily transportable to the site, rapid setup and dismantling, robust and	Digital Technology, Electronics and IOTs	READY TO COMMERCIALISED

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				<p>capable of providing real-time data about the nature of an anomaly for rework and correction process. This automated system will display the inspection result instantly and will auto-generate the inspection report for record and production analysis purposes. Artificial intelligence-based machine vision solution to feature higher accuracy, error-less inspection system and hence increase the speed and productivity of the assembly process. Customized algorithm offers flexibility to client to own the solution for lower MOQ at affordable price.</p>		
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