

ICT Innovation for Industry 4.0 Solutions

Editors:

Atijah Marsithi¹, Azrin Azli Suhaimi², Mohd Helmy Abd Wahab³,
Radzi Ambar⁴

Email:

atijah@pms.edu.my¹, helmy@uthm.edu.my³, aradzi@uthm.edu.my⁴

Abstract: The writing of the chapters in the book entitled ICT Innovation for Industry 4.0 Solutions came from the Technical Report of the Final Project Student Semester 5 December Session 2019, Diploma in Information Technology (Digital Technology), Department of Information and Communication Technology, Politeknik Muadzam Shah. This book consists of 10 chapters and the production of chapters in this book is an initiative implemented by the department in providing exposure to students in scholarly writing. This exposure is expected to cultivate their interest in research and publication activities.

Keywords: Innovation, technology, implement, cultivate

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**ATIYAH MARSITHI
AZRIN AZLI SUHAIMI
MOHD HELMY ABD WAHAB
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**ATIYAH MARSITHI
AZRIN AZLI SUHAIMI
MOHD HELMY ABD WAHAB
RADZI AMBAR**


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CONTRIBUTORS

Abdullah Azraai Hasan

Afzanizam Alias

Aishah On

Asyran Zarizi Abdullah

Azra Mohammad Amirruddin

Faezah Mohd Sa'ood

Fazilah Ismail

Harzulaili Saleh

Juhaina Mohamad

Linawati Razak@Ali

Maisatul Akmal Mat Tahir

Mat Sukri Mamat

Noor Muzlinda Mat Hashim

Noorrohani Ahmad

Rafidah Ab Rahman

Raja Norhafiza Raja Rosly

Riki Riswandi Zulbahri

Rodziah Ibrahim

Rosuzaini Isa

Siti Norhidayah Saad

Zeyana Abdullah

Politeknik Muadzam Shah

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Editors

Atijah Marsithi
Azrin Azli Suhaimi
Mohd Helmy Abd Wahab
Radzi Ambar

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<http://e-bookstore.uthm.edu.my>

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PREFACE

The writing of the chapters in the book entitled ICT Innovation for Industry 4.0 Solutions came from the Technical Report of the Final Project Student Semester 5 December Session 2019, Diploma in Information Technology (Digital Technology), Department of Information and Communication Technology, Politeknik Muadzam Shah. This book consists of 10 chapters and the production of chapters in this book is an initiative implemented by the department in providing exposure to students in scholarly writing. This exposure is expected to cultivate their interest in research and publication activities. Specially thank you to the Faculty of Electrical and Electronic Engineering, Universiti Tun Hussein Onn, Malaysia on the assistance provided and collaboration opportunity.

Atijah Marsithi

Azrin Azli Suhaimi

Department of Information Technology and Communication,
Politeknik Muadzam Shah

Mohd Helmy Abd Wahab

Radzi Ambar

Fakulti Kejuruteraan Elektrik dan Elektronik
Universiti Tun Hussein Onn Malaysia

1

Arduino RFID Emergency Traffic Alert (ART)

*Abdullah Azraai Hasan, Maisatul Akmal Mat Tahir,
Nurul Aisah Saharudin, Gayathri Arumugam,
NurulHuda Saharudin*

Department of Information Technology & Communication, Polytechnic
Muadzam Shah, Muadzam Shah, Pahang

1.1 INTRODUCTION

Road accidents can already be considered a habit in Malaysia. No, almost every day there is a lot of accident information that the mass media will report (Khairul Amri Kamarudin et al., 2018). So, it's no surprise that Malaysia is the third country in Asia to record the most fatal road accidents - behind Thailand and Vietnam - according to the Global Health Organization (WHO) and World Bank's Global Status Report on Road Safety 2018, last December (Shahid et al., 2015) A total of 6,284 deaths were recorded nationwide during 2018, showing a huge amount of road accidents (Mayou & Bryant, 2003). Not only road accidents, but fire accidents are also common accidents in our country. Based on the Fire and Rescue Department of Malaysia (JBPM) records over 300 deaths annually due to drownings nationwide (Khairul Amri Kamarudin et al., 2018).

There are also several rescue teams in operation to address this problem, such as ambulances in the event of an accident and Emergency Medical Rescue Service (EMRS) for fire accidents. The rescue team will reach an accident destination and provide a first-aid service or assistance to save the victim's life involved in an accident. In this case, the rescue team has trouble reached to the scene, because of traffic congestion with

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2

IOT Smart Tracking Luggage Applications

*Zeyana Abdullah, Linawati Razak@Ali,
Noor Muzlinda Mat Hashim, Nurhaniz Mohamad Shah,
Mohamad Syafiq Mohammad Johan, Nur Haniza Ahmad*

Department of Information Technology & Communication,
Polytechnic Muadzam Shah, Muadzam Shah, Pahang

2.1 INTRODUCTION

Today technology is growing with devices that have been developed from scientific knowledge. Many of the applications we can see are very useful in and individual's daily life. Lately, it has been heard about IoT (Internet of Things). IoT is the methodology of joining information got from various types of things to any virtual stage on existing Internet framework (Farooq et al., 2015). Also, IoT can be translated into one system called centralized network (Singh et. al., 2017). The centralized network will share data and information with other equipment and hardware. There are additionally different areas and situations in which the IoT can assume a noteworthy job and improve the nature of our lives (Al-fuqaha et al., 2015).

Many complaints from the travellers on the issue of luggage lost and exchanged with others increased. Society International Telecommunication Aeronautics (SITA) detailed that there were as yet 21.8 million packs, or 6.96 per 1000 being misused or taken in 2013. The rate was still high in 2014, with 7.3 packs per 1000 being misused or taken (Wong and Wong, 2017). From 1 January 2019 until 30 June 2019 there were 427 complaints about the loss of luggage (MalaysiaGazette, 2019). The buzzword Internet of Things (IOT) suggested sensors can be

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3

Student Examination Attendance System Using RFID

Juhaina Mohamad, Fazilah Ismail, Ganesh Shammugam, Muvir Harindran Sridharan, Nagavishnu Gunasegaran

Department of Information Technology & Communication,
Polytechnic Muadzam Shah, Muadzam Shah, Pahang

3.1 INTRODUCTION

This project is developed for students to get the attendance during final exams at the end of each semester using RFID scanner. Previously, lecturers need to use paper to obtain the attendance for students. The problem might occur when the paper damaged or lost. The system has been running with student's card and RFID scanner will detect the RFID number on the student card.

Sometimes, the student's attendance can be manipulated or cheated. Besides, using paper to record attendance of the students waste a lot of paper resources. The process of taking attendance is very complex and time consuming. User will get to overcome from this hectic manual based system to a betterment system which is using RFID scanner in examination attendance system.

In this system, there is an administrator to control the overall process involves updates data. Both users in the system need to use the username and password that has been set by the administrator. It shows the level of system security that cannot be accessed by others if do not know the username and password.

RFID is stands for Radio Frequency Identification. It is an automatic identification technology used for accessing or storing data on a RFID

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4

i-Hep App : The Development Of Mobile Application

*Raja Norhafiza Raja Rosly, Afzanizam Alias,
Srieasthre Rajindran Manickam, Muhammad Arief Hakimi Jamri,
Hakimie Fikrie Ozerein*

Department of Information Technology & Communication,
Polytechnic Muadzam Shah, Muadzam Shah, Pahang.

4.1 INTRODUCTION

The purpose of this project is to develop a mobile application for the uses of an organization where users can interact with this technology to support their business process through information system. The project namely as i-HEP which refer to *Hal Ehwal Pelajar* (HEP) purposely for HEP management in Polytechnic Muadzam Shah (PMS). The main reason our group choose this project is to solve problems that have been faced by the students and also the HEP management in PMS.

The problems faced by students are if student need to fill any form they have to walk around five minutes or around 500 meters to 700 meters just to get the a form at HEP. Furthermore, the office operates during office hours from 8 to 5 p.m and it is the same time for student to attend their class.

Second problem is ‘Buku Peraturan’ are manually printed and there is no softcopy to refer if they lost the printed version. The third problem is any announcements or notifications from the HEP were not reachable to all students. Thus, students cannot update with the current situation with the HEP. Lastly, all the complaints, applications for Kamsis and other applications regarding to the HEP are need to fill the form manually. So as the students, they need to wait for a longer time if they have they business with HEP.

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5

Internet of Things Based Smart Retractable Roof for Clothesline

*Rosuzaini Isa, Aishah On, Mohamad Raziq Mohamad Radzi,
Mohd Amirul Syafiq Mohd Fadhil, Mazlina Azlin Abdullah*

Department of Information Technology & Communication,
Polytechnic Muadzam Shah, Muadzam Shah, Pahang.

5.1 INTRODUCTION

Internet of Things (IoT) refers to an ongoing trend of connecting all kinds of physical objects to the internet. The internet can provide many things to the user and now it can also connect to an object. IoT basically means any system of physical devices that receive data over wireless network without human intervention.

At present people find difficult in fulfilling their daily basic work. Because of heavy work load and surge in growing industries many people couldn't reach a place on time. Nowadays because of corporate culture people spend less time at house, and some require the help of latest technologies for safety and other basic needs. With a blooming technology nowadays comes a solution for such problems. Many problems are divulged using latest technologies. This elucidation makes people of all formats comfortable and blithe. Similarly, this project too gives solution to such problem.

Controlling weather is impossible. With the unpredictable weather, hanging washed clothes in clothesline at open ground is not suitable with the possibility of raining probability. Thus this prototype solves and checks all the checklists of problems in this scenario. Hence, we



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6

Internet of Things Smartbabycare (Baby Thermal Monitoring System)

*Faezah Mohd Sa'oad, Rodziah Ibrahim,
Nur Syasya Amirah Mohd Rozi, Mohamad Khaizir Zulkurnain,
Siti Nuramalia Ahmad*

Department of Information Technology & Communication, Polytechnic
Muadzam Shah, Muadzam Shah, Pahang.

6.1 INTRODUCTION

The portable devices that are available today such as smartphones and tablets, are going to be the future of the technology due to their portability nature and the convenience that they provide to the users. Android platforms are the most popular platforms that are being used among these portable devices. One of the active areas where developers are eager to build new android application is the area of the internet of things (Majed A. Suhaim et al., 2017).

Nowadays, one of the most significant challenges that faces many families is baby care. Parents cannot continuously observe or monitor their babies all the time (Dina M. Ibrahim et al., 2019). It is becoming very difficult for most parents with new born babies to cater for their babies as well as do their day to day task due to relatively busy lifestyle as many parents often involve in domestic tasks as well as income generating activities.

The application of automatic temperature monitoring system where parents can monitor the temperature of their children is practically new in Malaysia and other countries. Babies are much more sensitive to high body temperature and any occurrence of fever has to be taken very seriously. SmartBabyCare is beneficial to the parents where such implementation will help parents to save their energy and time (A. A.

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7

MindMaster : DEVELOPMENT AUGMENTED REALITY-BASED MIND MAP FOR NETWORK FUNDAMENTAL COURSE

*Rafidah Ab Rahman, Azra Mohammad Amirruddin,
Thiveya Mahendran, Muhammad Adam Fahmi Bazri, Mohammad Aqil
Ikhwan Firdaus Abdul Nasir*

Department of Information Technology & Communication,
Polytechnic Muadzam Shah, Muadzam Shah, Pahang.

7.1 INTRODUCTION

According to the online Cambridge English Dictionary, a mind map is a type of simple illustration with lines and circles that arrange knowledge structure visually such that it becomes simpler to use or recall (*Mind Map | Meaning in the Cambridge English Dictionary*, n.d.). Liu et al. (2015) viewed mind map as a graphical overview of information that offers a simple way of finding the needed information. Mind maps are generally drawn quickly manually during lectures or meeting sessions to jot down central points, thus, avoiding wordy notes. However, for creative-challenge students, software applications capable of generating mind maps like Lucidchart, MindMeister, XMind, and Mindomo are a lifesaver (Miller, n.d.). Anas et al. (2019) and Parikh (2016) both have found that interactive mind map is an effective tool able to aid students in their learning activities.

On the other hand, Augmented Reality (AR) is a rising trend on mobile apps, driven by the recent increase of mobile technologies that are becoming more affordable, enabling more diverse applications in

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8

Smart Garbage Monitoring via Cloud

*Asyran Zarizi Abdullah, Riki Riswandi Zulbahri,
Nursahidah Siding, Nurul Husna Nasuha Jahari, Umira Masri*

Department of Information Technology & Communication,
Polytechnic Muadzam Shah, Muadzam Shah, Pahang.

8.1 INTRODUCTION

Nowadays, many beaches in Malaysia are polluted and cause the tourism sector in a big loss. In year 2011, a total of 1470895.25 tons of waste was collected in Kuala Lumpur, and by 2023 its expected that a total of 3360861.60 tons would be disposed of (Jayashree, Marthandan 2016). This pollutant is mainly due to waste dumped by locals and tourists. Moreover, the sea water was also being polluted and affects the marine mammals like fish and birds to misinterpret it as a food. To prevent this problem from getting worse, many volunteer organizations are organizing a beach cleanup program to help cleaning the beach. However, they are still using the conventional method, which is they have to collect the waste one by one, separate it and will record the required values manually. These methods actually are using a lot of time only for recorded all the information for future references.

Global 3R promotes “3R” (reducing, reusing and recycling) to build a healthy community through effective use of resources and materials(Chowdhury et al., 2014). Solid waste management is a challenge for the cities’ municipalities since it directly affects, among all, lifestyle, environment, and health. The goals for this project is to develop and design systems to facilitate the department of related volunteer organization or Non-Governmental Organization (NGOs) for efficient data collection and storage of waste dumped on the beach and calculate

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9

IOT Based KIZAMNA Water PH Detection Application

*Siti Norhidayah Saad, Mat Sukri Mamat,
Muhammad Azamuddin Samsuddin, Nornadia Asmiza Adnan,
Muhammad Shahrin Hakimi Shahril Anuar*

Department of Information Technology & Communication,
Polytechnic Muadzam Shah,
Muadzam Shah, Pahang.

9.1 INTRODUCTION

The pH is an indicator of the level of acid or base in water which is assessed on a scale from 0-14 (Doyle, 2015, pp. 1–3). The nature of water is divided into two namely acids and alkaline. Neutral or alkaline water has a pH of 7, while acidic water has a pH less than 7 and pH more than 7 indicate alkaline properties. Highly acidic water can corrode or even destroy metals. While water that is too alkaline commonly feels bitter and can cause deposits that line the pipes and utensil. However, most of human bodies contains high pH level especially patient who suffers from gout. Their body contains high level of uric acid (Contributor, 2017). As a result, patient with gout need to control their diet routine particularly high uric acid drinks. The ideal pH level of drinking water should be between 6 until 8.5 (Rubiati Islam et al., 2017, p. 36). Human body need to maintain pH equilibrium on a constant basis and will not be affected by water consumption (Apec Water, n.d.). For example, our stomachs have a naturally low pH level of 2 which is a beneficial acidity that helps us with food digestion.

However, if it exceeds the number that is feared to deposition of water in body's organ because of the alkaline nature that occurs at high water pH. Therefore, there is a need to help this patient to identify the pH

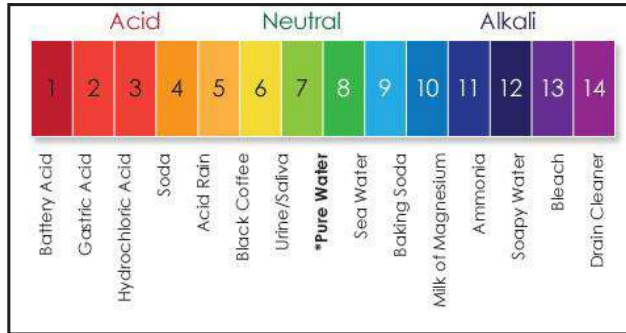


Figure 7: pH scale

9.6 CONCLUSION

The Kizamna water pH detection application provide prompt pH reading within 60 seconds. It is a crucial information for quick consideration before a gout patient start to drink. Overall, this will make it easier for gout patient to identify the pH level of water that they consume anything in their daily life. It will notify them whether the pH level of water is save to consume or not. Nevertheless, the product innovation is succeeding to comply the objective of the project by providing easier way to detect and notify gout patient the consumable status of the drink or liquid using mobile application.

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10

IOT Based Smart Farming: Toward Making The Plant Monitoring

*Noorrohani Ahmad, Harzulaili Saleh,
Muhammad Fidauddin Yusri,
Ahmad Zuhafifie Ahmad Suhaimi,
Muhamad Nasrul Muqriez Muhamad Tarmizie*

Department of Information Technology & Communication,
Polytechnic Muadzam Shah, Muadzam Shah, Pahang.

10.1 INTRODUCTION

Agriculture is the cornerstone of human life in terms of food, financial and economic resources. The situation in which agricultural activity becomes a business can occur when the production of agricultural produce or these traders not only exceeds their own living expenses, but also benefits the previous entrepreneurs (Kasim, 2020) .

Over the past few decades, the contribution of the Malaysian agricultural sector has been steadily declining due to the growth of the local industry and the service sector. In 1970, almost 30 percent of KDNK was contributed by agriculture. However, this percentage has dropped sharply to 8.2 percent in 2017 (Fadzil, 2018). Domestic commodity cultivation in the local agricultural sector due to its commercial value, has resulted in poor agricultural produce such as rice, vegetables and fruits in terms of size of crop production and contribution to the economy.

Among places that still use the conventional system is Taman Pertanian Jubli Perak, Kuantan. They still use manual and timer method that can cause many disadvantages for their plants. One of the disadvantages of using manual watering techniques and timer watering is that plants are planted or managed may not get enough water so they can cause the plant die (Fadzil, 2018).

10.4 DISCUSSION

In conclusion, hopefully My Farm IoT by AFM can help farmers maintain the quality of their plants and produce more by using this new millennial watering technique and can be one of the major watering systems; reducing and eliminating manual and timer systems in Malaysia. The fertilizing system also will help farmers in terms of fertilization so that plants that wilt and die will be reduced.

Finally, the system can be the first choice for farmers who want to start planting and at the same time keep their plants more organize.

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BIOGRAPHY

Atijah Marsithi is a Senior Lecturer and a former Head of Department at Department of Information Technology and Communication at Polytechnic Muadzam Shah. She holds a Master of Technical and Vocational from College University of Technology Tun Hussein Onn (KUiTTTHO) and a Bachelor's Degree in Computer Science with Honors from the University Putra Malaysia (UPM). She was awarded for Malaysia Polytechnic Staff Excellence and MoHE Excellent Service Awards for three times. She has experience in writing research papers, books and working in the industry for two years before joining the Malaysian Polytechnic as lecturer for Nineteen years until now. Her areas of interest include software and application development, big data, multimedia computing and computer system.



Azrin Azli Suhaimi is a Senior Lecturer and a former Head of Programme at Department of Information Technology and Communication at Polytechnic Muadzam Shah. He holds a Master of Science in Information Technology (Msc.IT) from University of Technology MARA (UiTM) and a Bachelor's Degree in Multimedia with Honors from the University Utara Malaysia (UUM). He has experience working in the industry for four years before joining the Malaysian Polytechnic as an instructor for fifteen years until now. He has been teaching various types of programming languages for the past fifteen years, including java, action script, HTML, PHP, SQL and C ++. He was always optimistic to teach and impart knowledge to his students.



Mohd Helmy Abd Wahab is a Senior lecturer and a former Head of Multimedia Engineering Lab and Intelligent System Lab at the Department of Computer Engineering, Faculty of Electrical and Electronic Engineering, Universiti Tun Hussein Onn Malaysia (UTHM) in 2014 and 2009. He is currently a Principal Research Fellow at Advanced Telecommunication Research Center, Faculty of Electrical and Electronic Engineering. In addition, he was a visiting research fellow at Center of Excellence on Geopolymer and Green Technology under cluster Green ICT, Unimap from 2018 – 2020. He received a Bachelor of Information Technology with Honours from Universiti Utara Malaysia and Master of Science (Intelligent System) from the same university in 2002 and 2004 respectively. He has completed several research grants; won several medals in research and innovation showcases and awarded several publication and teaching awards. He has authored and co-authored 2 academic books in database and WAP application, published several both local and international book chapters as well as published more than 200 technical papers in conferences and peer-reviewed journals. He also served as Editor-in-chief in Advances in Computing and Intelligent System Journal and Associate Editor at International Journal of Advanced Computer Science and Applications, UK and as Deputy Editor in Chief for Int. Journal of Software Engineering and Computing and scholarly contributed as committee for conferences, editorial team and manuscript reviewers. His research interests are in data mining, artificial intelligence and computer vision, mobile and wireless computing, web-based applications. He is currently a senior member of IEEE, IEEE Computer Society, IAEng, and Senior member of IACSIT.

Radzi Ambar is a senior lecturer of Computer Engineering Field at the Department of Electronic Engineering, Faculty of Electrical and Electronic Engineering (FKEE), Universiti Tun Hussein Onn Malaysia (UTHM). He received a Diploma in Control and Information Systems Engineering from Tsuruoka National College of Technology, Japan. Then, he received his Bachelor Degree in Information and Computer Science Engineering from Toyohashi University of Technology, Japan. He obtained his MSc. degree in Electrical Engineering in 2011 from Universiti Tun Hussein Onn Malaysia. Then, he received his Dr. Eng. in Mechanical and Control Engineering (Robotics) from Kyushu Institute of Technology, Japan in 2015. Prior to joining UTHM as an academician, he worked for 4 years as a R&D Software Engineer for Panasonic Communication (Malaysia) Sdn. Bhd. Then, he joined SHARP Manufacturing (Malaysia) Sdn. Bhd. as a quality assurance engineer for 2 years. He also held a position as a research assistant at Sagara Laboratory, Kyushu Institute of Technology, Japan. He was also the Head of Computer Engineering Field at the Department of Electronic, FKEE, UTHM. His research interests include mechatronics, underwater and mobile surface robotics, assistive devices for rehabilitation and agriculture robotics. He has authored and co-authored in various international book chapters as well as published more than 100 technical papers in conferences and peer-reviewed journals. He won several medals in research and innovation showcases and best jury award. Currently, he is a Senior Member of Institute of Electrical and Electronics Engineers (IEEE) and serves as manuscript reviewers for various national and international journals and proceedings.

