

# Dr. Norasmadi bin Abdul Rahim

## Associate Professor



### ADDRESS

Mechatronics Department, Faculty of Electrical Engineering & Technology, Universiti Malaysia Perlis, Pauh Putra Campus, 02600 Arau, Perlis, MALAYSIA

### EDUCATION

*PhD in Mechatronic Engineering*  
Universiti Malaysia Perlis, 2015  
Pattern Recognition and Signal Processing

*MSc in Electrical Engineering*  
Universiti Teknologi MARA, 2005  
Advanced Signal Processing and System Identification

*B.Eng (Hons) in Electrical Engineering (Power)*  
Universiti Teknologi MARA, 2002  
Power System and Fuzzy Logic Control

### WORK EXPERIENCE

*Postgraduate Program Chairman, Universiti Malaysia Perlis*  
2022 - Current  
*Associate Professor, Universiti Malaysia Perlis*  
2021-Current

*Senior Lecturer, Universiti Malaysia Perlis*  
2015-2021

*Mechatronic Head of Program, Universiti Malaysia Perlis*  
2008-2009

*Lecturer, Universiti Malaysia Perlis*  
2005-2014

*Teaching Engineer, Universiti Malaysia Perlis*  
2004-2005

### CONTACT



+6019-4587176



[norasmadi@unimap.edu.my](mailto:norasmadi@unimap.edu.my)



<https://norasmadi.unimap.edu.my>

### PROFILE

Dr. Norasmadi leads and defines projects around pattern recognition, advanced signal processing and system identification at Universiti Malaysia Perlis (UniMAP). His work focuses on the design and development of an intelligent system in order to interact with the real-world problem. Norasmadi completed his PhD in 2015 on intelligent techniques to recognize an acoustic signal based on pattern recognition (Ensemble Methods). He has authored and co-authored more than 70 research works (journals, book chapters, conference papers) and served as organizing committee for numerous national and international conferences.

### RESEARCH PROFILE

Research Paper	Cumulative Impact Factor	Graduated Students	Active Students
86	8.308	10	8

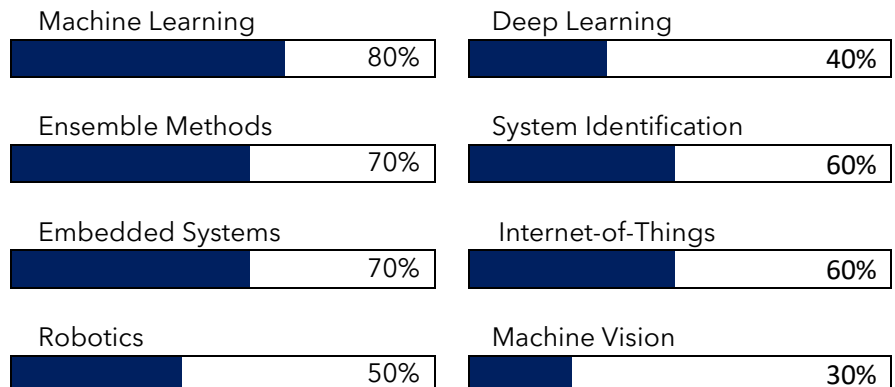
Journals	Conferences	Book Chapters	Awards
28	56	2	26

	No. of Paper	H-index	No. of Citation
	63	12	348
	78	16	644

\*updated 14 September 2022

Cumulative Impact Factor (CIF)	Total	Q1	Q2	Q3	Q4
8.308	5	1	3	-	1

### RESEARCH SKILLS



UPDATED 14 SEPTEMBER 2022

## TEACHING

### ***Undergraduate Course:***

1. Microprocessor
2. Microcontroller and Interfaces
3. Fundamental of Electrical Engineering
4. Analog Electronics
5. Embedded System Design and Applications
6. Embedded System and Interfacing
7. Digital Electronics
8. Digital Logic Design

## PROFESIONAL ASSOCIATIONS

1. Board of Engineers Malaysia (BEM) - **65984A**
2. Malaysia Board of Technologist (MBOT) - **GT18051436**
3. SCience and Engineering Institute (SCIEI) - **20120705001**
4. International Association of Engineers (IAENG) - **109829**
5. International Association of Computer Science and Information Technology (IACSIT) - **80350254**

## POSTGRADUATE SUPERVISION

Graduated Postgraduate	Main Supervisor	Co- Supervisor
Doctor of Philosophy (PhD)	1	3
Master of Science (MSc)	1	5

Registered Postgraduate	Main Supervisor	Co- Supervisor
Doctor of Philosophy (PhD)	1	4
Master of Science (MSc)	1	3

### ***Graduated PhD Postgraduate:***

1. Hayder Abdulazeez Yousif Al-Yasari (**Main SV - 2020**) - Evaluation of Lower Limb Muscles Fatigue in 400-Meters Sprinting using Three Pacing Strategies based on sEMG Signal
2. Ahmad Nasrul Norali (**Co-SV - 2020**) - Classification of Human Breathing Activity based on Electromyography Signal of Respiratory Muscles
3. Abdul Syafiq Abdull Sukor (**Co-SV - 2019**) - Context-aware Activity Recognition and Abnormality Detection Approaches in Smart Home Environments
4. Marni Azira Markom (**Co-SV - 2018**) - The Mobile Robot System for Mapping and Localisation Utilising Single Laser Range Finder in Static Environments

### ***Graduated MSc Postgraduate:***

1. Azarul Fahmin Ab Hamid (**Co-SV - 2022**) - Analysis on Network Performance by Considering Doppler Shift Effect for Connected Car Wireless Mobile Communication
2. Yallini A/P Selva (**Co-SV - 2020**) - Effect of Stability Exercises on 10M Air Rifle Shooting Performance
3. Anwar Mohammed Ali (**Co-SV - 2019**) - Smart Room Thermal Comfort Control using Fuzzy Inference System
4. Hayder Abdulazeez Yousif Al-Yasari (**Main SV - 2016**) - A Classification of EMG Signal from Masseter and Buccinators, Muscles to Control the Directional Movement of Power-Assisted Wheelchair

5. Humairah Mansor (**Co-SV - 2013**) - Development of Swarming Algorithm for Mobile Robot
6. Aida Sharmila Wati Binti Wahab (**Co-SV - 2010**) - Design of an Artificial Intelligent Diagnostic system for Tuberculosis Infection

**Registered PhD Postgraduate:**

1. Ooi Boon Pin (**Main SV**) - Hybrid Ensemble Model to Solve Small Sample-Sized Classification Problems
2. Mohd Hafiez Mohd Razali (**Co-SV**) - Intelligent Bioacoustic Monitoring System: Recognition of Animal Sound using Microphone Array
3. Mohd Nazri Abu Bakar (**Co-SV**) - Quality Measurement of Mango for Grading Standards using Multi Sensor Modalities and Decision Support System
4. Mustafa Mahmood Sabry (**Co-SV**) - 3D Computed Tomography Analysis using Deep Learning
5. Erdy Sulino Muslim Tan (**Co-SV**) - Soil NPK Nutrition Prediction using Machine Learning Techniques for Each Phenology Harumanis Mango Grown

**Registered MSc Postgraduate:**

1. Wan Mohd Nooriman Wan Yahya (**Co-SV**) - Development of Intelligent Green House Irrigation System using Wireless Sensor Network
2. Muhammad Ammar Asyraf Che Ali (**Co-SV**) - Optimisation of Stingless Beehive Conditions and Corresponding Parameters Utilising IoT and Machine Learning for Improved Honey Production
3. Fateh Alrahman Kamal Qasem Al-Nagashi (**Main SV**) - Ensemble Classifier Algorithm Incorporating Deep Learning Dropout Approach Small Sample-Sized Problems

**UNDERGRADUATE SUPERVISION**

**Graduated:**

1. Ong Chor Kian (**2022**) - Human Activity Recognition using Deep Learning Approach
2. Fahim Yusof Mohd Hanafiah (**2022**) - Pathological Voice Disorder Classification using Convolutional Neural Network Model
3. Mohamad Shairil Rezman Mohamad Nizam (**2022**) - Prediction of Soil Nutrient for Reproductive Vegetative Shoot Grow using Embedded Fuzzy Logic
4. Mohd Nizamudin Abdul Rasid (**2022**) - Development of Intelligent Living Room Lighting using Embedded Fuzzy Logic
5. Omar Qaiyyum Mohammad Aslahuddin (**2021**) - Voice Disorder Classification based on 1/3 Octave Filter Bank
6. Abdul Fadhil Alias (**2021**) - Paddy Fields Fungus and Bacteria Early Prediction based on Embedded Fuzzy Logic
7. Teng Keat Fei (**2021**) - A Study of Random Weight Neural Network in Classifier Ensemble Model
8. Lee Chee Ling (**2020**) - Pathology Voice Recognition based on Machine Learning Approach
9. Teoh Shi Lin (**2020**) - Development of a Secured Laboratory Access System based on Face Recognition
10. Muhammad Amir Harith Abdul Jalil (**2020**) - Embedded Fuzzy Logic Controller based Irrigation System for Harumanis Mango
11. Danial Aiman Sukarno (**2020**) - Development of Excess Noise Monitoring System based on 1/3 Octave Filter Bank
12. Mooi Tah She (**2019**) - Fatigue Classification for 400-Meter Running based on Data Transformation Method
13. Lee Weng Yau (**2019**) - Harumanis Index Level Identification based on Colour Image Processing Method

14. Abdulmalik Mohamed Alzubair Ahmed Ibrahim Altash (**2019**) - Identification of Iqra' Recitation based on The Domain Analysis
15. Lau Chuan Ping (**2019**) - An Intelligent Desk Lamp for Eye Comfort using Fuzzy Logic Controller
16. Tan Kean Tai (**2018**) - Sudden Cardiac Arrest Prediction based on Electrocardiogram (ECG) Signals Morphology
17. Muhammad Nur Amin Hamid (**2018**) - A Study of Excess Noise Emanating from Hammer Mill Machine based on 1/3 Octave Filter Bank
18. Lai Jiunn Chyuan (**2018**) - Accelerometer-based Personalized Gesture Recognition for Mobile Robot Application
19. Muhammad Ariff Ashraf Abdul Hamid (**2017**) - Knock Pattern Recognition for Home Automation
20. Norsyahmi Mohd Zahir (**2017**) - Classification of Knee Joint Vibroarthrographic (VAG) Signal based on Support Vector Machines
21. Kang Wei Yu (**2017**) - An Enhanced Random Subspace Ensemble Method using Genetic Algorithm Approach
22. Jayaganes A/L R Viswanathan (**2017**) - A Study of Soft Independent Modelling of Class Analogy (SIMCA) Classifier for Multi-Class Application
23. Yasmin Suraya Zamre (**2017**) - Door Access Control System based on Voice Biometric Authentication

#### PANEL EXAMINERS

Degree	Internal	External
Doctor of Philosophy (PhD)	2	-
Master of Science (MSc)	4	-

1. Chawki Berkai, Non-Linear Features and Feature Selection Algorithms for Speech based Prediction of Body Mass Index (BMI), Universiti Malaysia Perlis, 2017 (**Internal-PhD**).
2. Siow Lean Thiam, Design and Analysis of Ultrasound Tomography for Imaging of Void Fraction on Composite Pipe, Universiti Malaysia Perlis, 2017 (**Internal-MSc**).
3. Muhammad Aizat Abu Bakar, Development of Portable Electronic Nose for Monitoring the Atmosphere Hazards in Confined Space, Universiti Malaysia Perlis, 2018 (**Internal-MSc**).
4. Asyraf Hakimi Abu Bakar, Non-Invasive Jaundice Detection System using Colour Card Technique, Universiti Malaysia Perlis, 2018 (**Internal-MSc**).
5. Rina Syazwani Zulkafli, A Smart Battery Charging System based on the Depth of Discharged Technique for a Grid-Connected Photovoltaic System, Universiti Malaysia Perlis, 2018 (**Internal-MSc**).
6. Muhammad Amran, Development of Magnetic Induction Spectroscopy Technique for Internal Fixator Screw Self-Loosening Detection, 2022 (**Internal-PhD**)

#### PROFESSIONAL DEVELOPMENT ACTIVITIES

1. Judge Panel for ICTE2022 Digital Innovation Competition **2022** (DIC2022)
2. Judge Panel at Politeknik Sultan Abdul Halim Mu'adzam Shah for the National Innovation and Invention Competition through Exhibition **2022** (iCompEx2022)
3. Judge Panel at Universiti Teknikal Malaysia Melaka for Innovation and Design Expo **2021** (IDEX2021)
4. Judge Panel at Universiti Malaysia Perlis for International Virtual Expo of Innovation Product and System Design **2021** (In-ViDE 2021)
5. Judge Panel at Politeknik Sultan Abdul Halim Mu'adzam Shah for the National Innovation and Invention Competition through Exhibition **2021** (iCompEx2021)

6. Judge Panel at Universiti Malaysia Perlis for Virtual Expo of Innovation Product and System Design **2020** (ViDE2020)
7. Judge Panel at Politeknik Sultan Abdul Halim Mu'adzam Shah for the National Innovation and Invention Competition through Exhibition **2020** (iCompEx2020)
8. Judge Panel at the National Robotic Competition (NRC) for Open Category (Upper Secondary School) (**2019**)
9. Invited Speaker and Facilitator at Kolej Matrikulasi Perlis for Robotic Workshop (**2019**)
10. Speaker at Kedah Industrial Skills and Management Development Centre (KISMEC) for Long Range (LoRa) Transceiver and Internet of Things (IoT) (**2018**)
11. Invited Speaker and Facilitator at Kolej Matrikulasi Perlis for Robotic Workshop (**2018**)
12. Invited Speaker at Mechatronic Laboratory, Mie University, Japan for Internet-of-Things (IoT) Workshop (**2017**)

## RESEARCH GRANTS

### **Active Grant (Total = RM520,130):**

No.	Title	Grant	Duration	Status	Amount
1	Research & Development of "Local Community Online Marketplace - LoCoMART"	Uni PRIMA	2021-2023	Leader	RM50,000
2	Computer Vision based Pest Control in Smart Farming	Uni PRIMA	2021-2023	Member	RM20,000
3	New Ensemble Classifier Algorithm Incorporating Deep Learning Dropout Approach for Small Sample-Sized Problems	FRGS	2020-2022	Leader	RM66,680
4	Optimisation of Stingless Bee Hive Conditions and Corresponding Parameters Utilising IoT and Machine Learning for Improved Honey Production	FRGS	2020-2022	Member	RM79,000
5	Design and Development of an Automatic Waterjet Fruit Peeling and Cutting Machine	Uni PRIMA	2020-2022	Member	RM30,000
6	Intelligent Machine Learning Technique for Predicting the Moisture Distribution and Provide Quantification Assessment using Deep Convolutional Neural Network	TRGS	2019-2022	Member	RM145,000
7	Formulation of Microgrid Energy Management of Energy Internet Using Fuzzy Based Model Predictive Control	FRGS	2019-2021	Member (UMP)	RM60,450
8	A New Multimodal Classification-based Method for 3D Point Cloud Big Data Management in Heritage Building Preservation	FRGS	2017-2020	Member	RM69,000

### **Completed Grant (Total = RM966,000):**

No.	Title	Grant	Duration	Status	Amount
1	Design of an Artificial Intelligent Diagnostic System for Tuberculosis Infection	Sc Fund	2007-2009	Member	RM155,000
2	Development of Ultrasonic Tomographic Imaging Instrument for Measuring Oxygen Transfer Rate in Bioreactor	Sc Fund	2007-2009	Member	RM205,000

3	Fundamental Study and Investigation of Intelligent Algorithm for Autonomous Multi-Terrain Mobile Robot Control and Navigation in Large Scale Plantations	FRGS	2007-2009	Leader	RM100,000
4	A Study of An Intelligent Control System for Lower Limb Rehabilitation	FRGS	2007-2009	Member	RM72,000
5	Attitude Control System Project for Innosat	ATSB	2006-2010	Member	RM118,000
6	Fundamental Study on The Development of Tactile Sensory Aid for Hearing Impaired	FRGS	2008-2010	Member	RM101,000
7	Memristor based Silicone Brain-Enabling Instantaneous Artificial Neural Network Performing Pattern Recognition	ERGS	2013-2015	Leader	RM120,000
8	Early Detection System for Indoor Biological and Gas Contaminants	PRGS	2015-2017	Member	RM85,000
9	Prediction of Solar Energy and Average Clearness Index at North Malaysia Region	STG	2006-2007	Member	RM10,000

## INDUSTRIAL COLLABORATIONS AND RESEARCH CONSULTATIONS

1. Collaboration on Ground Penetrating Radar at Agency Nuclear Malaysia (Scope: Artificial Intelligence) **(2021)**
2. Collaboration on the Design and Development of Automatic Waterjet Fruit Peeling and Cutting Machine at Walta Engineering Sdn. Bhd. **(2020) - Funded (RM30,000)**
3. Collaboration on the Design and Development of Fully Integrated IR4.0 Manufacturing Line for Surgical Blades at PGMedic (M) Sdn. Bhd. **(2020)**
4. Research Collaboration for a Study Lower Limb Muscle Effect for High Jump and 400-M Sprinting at Majlis Sukan Negeri Perlis **(2018)**
5. Research Consultant for Blades Manufacturing Processes: Robotics for Rod Pick and Place at Walta Engineering Sdn. Bhd. **(2017-2018)**
6. Research Consultant for Machine and Environmental Noise Testing at Peneraju Hijau Sdn. Bhd. **(2016)**

## SCIENTIFIC COMMUNITY SERVICES

### **Program Committees:**

1. **Webmaster**, FTKE Postgraduate Academy (2022)
2. **Webmaster**, International Virtual Expo of Innovation Product and System Design 2021 (In-ViDE2021)
3. **Webmaster**, International Conference on Man Machine Systems (ICoMMS2021)
4. **Webmaster**, Virtual Expo of Innovation Product and System Design 2020 (ViDE2020)
5. **Technical**, International Conference on Man Machine Systems (ICoMMS2019)
6. **Secretariat**, International Conference on Man Machine Systems (ICoMMS2017)
7. **Secretariat and Webmaster**, The 11th Asian Conference on Chemical Sensor (ACCS2015)

### **Reviewer (Journal):**

1. Journal of Mathematical Problems in Engineering **(2021)**
2. Indonesian Journal of Electrical Engineering and Computer Science **(2021)**
3. Computers in Biology and Medicine **(2021)**

4. Pervasive and Mobile Computing (**2020**)
5. Digital Signal Processing (**2017,2018,2019,2020,2021**)
6. Measurement and Control (**2017,2018**)
7. Computers and Electronics in Agriculture (**2017**)
8. Language Research and Evaluation (**2013**)

**Reviewer (Conference):**

1. International Conference on Signal Processing Systems (ICSPS) (**2016,2018,2019,2020**)
2. International Conference on Man Machine Systems (ICoMMS)(**2017,2019,2021**)
3. International Conference on Biomedical Engineering (ICoBE)(**2019, 2021**)
4. Malaysian Technical Universities Conference on Engineering and Technology (MUCET)(**2017**)
5. IEEE Student Conference on Research and Development (SCoReD) (**2014,2015**)
6. International Colloquium on Science and Technology (ICOST)(**2014**)
7. IEEE Colloquium on Humanities, Science & Engineering Research (CHUSER)(**2014**)
8. IEEE Symposium on Business, Engineering & Industrial Applications (ISBEIA)(**2013**)
9. IEEE Business, Engineering & Industrial Applications Colloquium (BEIAC)(**2013**)
10. IEEE Symposium on Industrial Electronics and Applications (ISIEA)(**2012**)

**AWARDS**

**University Awards:**

1. Anugerah Perkhidmatan Cemerlang - **2008**
2. Anugerah Perkhidmatan Cemerlang - **2017**

**Competition Awards:**

No	Project	Medal	Award	Year
1	Design and Development of a Multi-Terrain Mobile Robot for Oil Palm Estate Applications	Bronze	UniMAP	2007
2	Process Tomography Imaging Sensor	Gold	UniMAP	2008
3	Process Tomography Imaging Sensor	Gold	MTE	2008
4	Autonomous Mobile Robot Surveillance (ARMSBot)	Bronze	UniMAP	2008
5	An Intelligent Gesture to Voice Communication System for Hearing Impaired	Gold	UniMAP	2009
6	An Intelligent Sign Language to Voice Communication System for Hearing Impaired	Gold	ITEX	2010
7	An Early Detection of Basal Stem Rot (BSR) Disease in Oil Palm Trunk using Intelligent Autonomous Robot	Bronze	MTE	2011
8	Low Cost SMS-based Car Security System	Bronze	MTE	2011
9	Nurse Following Robot: An Automated Robust Nurse Following Robot by Enhance High-Speed Vision System with Sensor Integration for Dynamic Human Tracking and Obstacle Avoidance	Silver	UniMAP	2012

10	ChicSense : Malodour Monitoring System	Gold	BIS	2013
11	NYSIS: Natural Intel Indoor Air Purifier	Bronze	BIS	2013
12	Aromatic Rice classification System (ARCSys)	Gold	UniMAP	2014
13	Aromatic Rice classification System (ARCSys)	Silver	MTE	2014
14	HAZSens: Web-Based Machine Olfaction System for Atmospheric Hazards	Silver & Special Award	IENA	2014
15	Occupational Noise Exposure Monitoring for Manufacturing Industries	Silver	EREKA	2016
16	Lighting System based on the Human Presence	2 <sup>nd</sup> Place	TGL-CTREST	2017
17	IOT-ACT: An IOT-based Air Conditioning Control for Thermal Comfort	Silver	EREKA	2018
18	Smart Manufacturing: Voice Controlled Automation	1 <sup>st</sup> Place	VINDREC	2018
19	IOT Monitoring System for Effective Harvesting of Stingless Bee Honey	Gold and Best Award	ViDE2020	2020
20	A Cascade Hyperbolic Recognition using Hybrid Feature Extraction in Subsurface Mapping	Bronze	EREKA	2021
21	HA <sup>2</sup> MS: Honey Harvesting Monitoring System	Silver	EREKA	2021
22	A Cascade Hyperbolic Recognition using Hybrid Feature Extraction in Subsurface Mapping	Gold	iPerlis	2021
23	IoT Betta Fish Aquaponic Monitoring System	Gold	iCompEx	2022
24	IoT Based Smart Betta Fish Aquaponic Monitoring System with Fish Disease Prediction	Silver	Niice	2022

## PUBLICATIONS

### **Journal:**

1. N.A.N. Ali, K. Kamarudin, L.C. Kiang, M.S.M. Azmi, A.H. Ismail, N. Abdul Rahim, W.M.N.W. Yahya, "3D Reconstruction of Fruit Shape based on Vision and Edge Sections", Journal of Electronic & Information System, Vol.4, Issue 1, Pages 26-32 [\[Link\]](#)
2. A.S. Abdull Sukor, L.M. Kamarudin, A. Zakaria, N. Abdul Rahim, S. Sudin, H. Nishizaki, "RSSI-Based for Device-Free Localization Using Deep Learning Technique", Journal of Smart Cities, Vol. 3, Issue 2, Pages 444-455, **2020** [\[Link\]](#)
3. B.P. Ooi, N. Abdul Rahim, A. Zakaria, M.J. Masnan, S.A. Abdul Shukor, "Random Subspace Oracle (RSO) Ensemble to Solve Small Sample-Sized Classification Problems", Journal of Intelligent & Fuzzy Systems, Vol. 36, Issue 4, Pages 3225-3234, **2019 (Q2 - Impact Factor: 1.637)**
4. A.S. Abdull Sukor, A. Zakaria, N. Abdul Rahim, L.M. Kamarudin, R. Setchi, H. Nishizaki, "A Hybrid Approach of Knowledge-Driven and Data-Driven Reasoning for Activity Recognition in Smart Homes", Journal of Intelligent & Fuzzy Systems, Vol. 36, Issue 5, Pages 4177-4188, **2019 (Q2 - Impact Factor: 1.637)**



5. H.A. Yousif, N. Abdul Rahim, A.F. Salleh, A. Zakaria, K. Alfarhan, "Assessment of Muscles Fatigue during 400-Meters Running Strategies Based on the Surface EMG Signals", *Journal of Biomimetics, Biomaterials and Biomedical Engineering*, Vol. 42, Pages 1-13, **2019**
6. H.A. Yousif, N. Abdul Rahim, A.F. Salleh, A. Zakaria, "Evaluation of Lower Limb Muscles Fatigue and Force during Running 400-Meters Using Learning Machine", *Journal of Biomimetics, Biomaterials and Biomedical Engineering*, Vol. 43, Pages 39-53, **2019**
7. B.P. Ooi, N. Abdul Rahim, A. Zakaria, M.J. Masnan, S.A. Abdul Shukor, M.P. Paulraj, "Parametric Feature Selection for an Enhanced Random Linear Oracle Ensemble Method", *Journal of Telecommunication, Electronic and Computer Engineering*, Vol. 10, No. 1-13, Pages 111-116, **2018**
8. A.S.A. Sukor, A. Zakaria, N. Abdul Rahim, R. Setchi, "Semantic Knowledge Base in Support of Activity Recognition in Smart Home Environments", *International Journal of Engineering & Technology*, Vol. 7, No. 4.27, Pages 67-72, **2018**
9. S.A. Abdul Shukor, N. Abdul Rahim, K. Kohlhof, Z.A.Z. Jamal, "Internet-of-Things (IoT) for Human Thermal Comfort: A Simulative Investigation", *Journal of Telecommunication, Electronic and Computer Engineering*, Vol. 10, No. 1-14, Pages 119-123, **2018**
10. M.N. Abu Bakar, A.H. Abdullah, N. Abdul Rahim, H. Yazid, S.N. Misan, M.J. Masnan, "Rice Leaf Blast Disease Detection Using Multi-Level Colour Image Thresholding", Vol. 10, No. 1-14, Pages 1-6, **2018**
11. N.S. Khalid, A.H. Abdullah, S.A.A. Shukor, N.D. Dalila, M.J. Masnan, H. Mansor, N. Abdul Rahim, F.S.A. Sa'ad, "Detection of Colletotrichum Gloeosporioides Fungus Isolates Development/Spread for Mango (*Mangifera Indica* L.) Cultivar from Electronic Nose Using Multivariate-Statistical Analysis", *Journal of Telecommunication, Electronic and Computer Engineering (JTEC)*, Vol. 10, No. 1-6, Pages 171-175, **2018**
12. B.P. Ooi, N. Abdul Rahim, A. Zakaria, M.J. Masnan, S.A. Abdul Shukor, "An Enhanced Random Linear Oracle Ensemble Method using Feature Selection Approach based on Naïve Bayes Classifier", *Journal of Telecommunication, Electronic and Computer Engineering*, Vol. 9, No. 4, Pages 69-77, **2017**
13. A.N. Norali, A.H. Abdullah, Z. Zakaria, N. Abdul Rahim, S.K. Nataraj, "Human Breathing Classification Using Electromyography Signal with Features Based on Mel-Frequency Cepstral Coefficients", *International Journal of Integrated Engineering - Special Issue on Electrical Electronic Engineering* Vol. 9, No. 4, Pages 85-92, **2017**
14. A.F. A Hamid, M. T. A. Rahman, S. F. Khan, A. H. Adom, M. A. Rahim, N. Abdul Rahim, M. H. N. Ismail, A. Norizan, "Connected car: Engines diagnostic via Internet of Things (IoT)", *Journal of Physics: Conference Series (JPCS)*, 908 (1), Pages 1-11, **2017**
15. Hayder A. Azeez, N. Abdul Rahim, M. J. A. Safar, "EMG Controlled Wheelchair Movement based on Masseter and Buccinators Muscles", *International Journal of Engineering Trends and Technology (IJETT)*, Vol. 37, No. 3, Pages 133-139, **2016**
16. Hayder A. Azeez, N. Abdul Rahim, M. J. A. Safar, "Controlling Power-assisted Wheelchair Movements by using LDA Classifier", *International Journal of Engineering Trends and Technology (IJETT)*, Vol. 37, No. 5, Pages 269-272, **2016**
17. N. Abdul Rahim, M.P. Paulraj, A.H. Adom, S.A. Abdul Shukor, M.J. Masnan, "Homogeneous Multi-Classifer System for Moving Vehicles Noise Classification Based on Multilayer Perceptron", *Journal of Intelligent & Fuzzy Systems*, Vol. 29, No. 1, Pages 149-157, **2015 (Q2 - Impact Factor: 1.812)**
18. Nurlisa Yusuf, Ammar Zakaria, Mohammad Iqbal Omar, Ali Yeon Md Shakaff, Maz Jamilah Masnan, Latifah Munirah Kamarudin, Norasmadi Abdul Rahim, Nur Zawatil Isqi Zakaria, Azian Azamimi Abdullah, Amizah Othman and Mohd Sadek Yasin, "In-Vitro Diagnosis of Single and Poly Microbial Species Targeted for Diabetic Foot Infection using E-Nose Technology", *BMC Bioinformatics*, Vol. 16, Issue 1, Pages 158, **2015 (Q1 - Impact Factor: 2.58)**

19. M. H. M. Razali, S. M. Mamduh, K. Kamarudin, A. Zakaria, N. A. Rahim, L. M. Kamarudin, N. Azmi, A. Y. M. Shakaff, F. S. A. Saad, and S. A. A. Shukor, "Development of Microphone System for Low Cost Bioacoustic Device", *Journal of Medical Imaging and Health Informatics*, Vol. 5, No. 6, Pages 1242-1245, **2015 (Q4 - Impact Factor: 0.642)**
20. Humairah Mansor, Abdul Hamid Adom, Norasmadi Abdul Rahim, "Development of Leader and Follower Strategy for Swarm Robot Applications", *Jurnal Teknologi*, Vol. 77, No. 28, Pages 55-59, **2015**
21. A.H. Abdullah, A.Y.M. Shakaff, A.H. Adom, A. Zakaria, F.S.A. Saad, N.A. Rahim, K. Kamaruddin, S.M. Mamduh, J.M. Sah, T.G. Teo, "Mobile Olfaction System for Poultry Farm Malodour Monitoring", *Australian Journal of Basic & Applied Sciences*, 8(4), Special **2014**, Pages 593-600.
22. N. Abdul Rahim, Paulraj M P and A.H. Adom, "Classification of Moving Vehicles using Multi-Classifer with Time-Domain Approach", *International Journal of Computer Applications*, Volume 71, No. 1, Pages 12-17, June **2013** (ISSN: 0975-8887).
23. N. Abdul Rahim, M.P. Paulraj, A.H. Adom, "Heterogeneous Multi-Classifiers for Moving Vehicle Noise Classification using Bootstrap Method", *International Journal of Engineering and Advanced Technology™ (IJEAT)*, Volume-2, Issue-4, April **2013**, Pages 435-439 (ISSN: 2249-8958).
24. N. Abdul Rahim, M.P. Paulraj, A.H. Adom, "Adaptive Boosting with SVM Classifier for Moving Vehicle Classification", *Journal of Procedia Engineering*, Volume 53 (**2013**), Pages 411-419 (ISSN: 1877-7058)
25. M.P. Paulraj, Abdul Hamid Adom, Sathishkumar Sundararaj, Norasmadi Bin Abdul Rahim, "Moving Vehicle Recognition and Classification based on Time Domain Approach", *Journal of Procedia Engineering*, Volume 53 (**2013**), Pages 405-410 (ISSN: 1877-7058).
26. N. Abdul Rahim, Paulraj M P, A.H. Adom, "Homogeneous Multi-Classifiers for Moving Vehicle Classification", *Karpagam Journal of Computer Science*, Vol 6, pp. 342-354, Issue Sep-Oct **2012**.
27. A.H. Ismail, S.J. Jamil, A. Hilmy Ismail, M.N. Ayob, N. Abdul Rahim, "A Comprehensive Study of Using 2D Barcode for Multi Robot Labelling and Communication", *International Journal on Advanced Science Engineering Information Technology*, Vol. 2 (**2012**), No. 1 (IJASEIT)
28. Humairah Mansor, Abdul Hamid Adom, Norasmadi Abdul Rahim, "Wireless Communication for Mobile Robots Using Commercial System", *International Journal on Advanced Science Engineering Information Technology*, Vol. 2 (**2012**), No. 1 (IJASEIT)

### **Book Chapters:**

1. N. Abdul Rahim, Paulraj M P, A. H. Adom, "Adaptive Boosting for Moving Vehicle Noise Classification using SVM and KNN Classifier", *Emerging Trend in Engineering Research*, Vol 1, pp 229-238, **2013**, Bonfring Publisher, India (ISBN 978-93-82338-32-1)
2. A.H. Abdullah, N.A. Rahim, M.J. Masnan, F.S.A. Sa'ad, A. Zakaria, A.Y.M. Shakaff, O. Omar "Rice and The Electronic Nose", *The Electronic Nose and Tongue in Food Science*, pp. 103-113, **2016**, Elsevier Inc. (ISBN:978-0-12-800243-8)

### **Conferences:**

1. H. Ali, N.S.M. Ideris, A.F. Ahmad Zaidi, M.S. Zanar Azalan, T.S. Tengku Amran, M.R. Ahmad, N. Abdul Rahim, S.A. Abdul Shukor, "Ground penetrating radar for buried utilities detection and mapping: a review", *International Conference on Man Machine Systems (ICoMMS2021)*, *Journal of Physics: Conference Series*, Vol. 2107, Issue 1, Pages 1-9, **2021** [[Link](#)]
2. T.C. Keong, S.A. Abdul Shukor, N. Abdul Rahim, "Development of a Mobile Platform with IoT for LIDAR", *International Conference on Man Machine Systems (ICoMMS2021)*, *Journal of Physics: Conference Series*, Vol. 2107, Issue 1, Pages 1-7, **2021** [[Link](#)]

3. B.P. Ooi,, N. Abdul Rahim, M.J. Masnan, A. Zakaria, "A study of extreme learning machine on small sample-sized classification", International Conference on Man Machine Systems (ICoMMS2021), Journal of Physics: Conference Series, Vol. 2107, Issue 1, Pages 1-7, **2021** [[Link](#)]
4. W.M.N.W. Yahya, A.H. Abdullah, N. Abdul Rahim, E.S.M.M. Tan, "Fuzzy logic based prediction of micronutrients demand for harumanis mango growth cycles", International Conference on Man Machine Systems (ICoMMS2021), Journal of Physics: Conference Series, Vol. 2107, Issue 1, Pages 1-7, **2021** [[Link](#)]
5. S.H. Tan, L.C. Kiang, K. Kamarudin, A.H. Ismail, N. Abdul Rahim, M.S.M. Azmi, W.M.N.W. Yahya, "Vision-Based Edge Detection System for Fruit Recognition", International Conference on Man Machine Systems (ICoMMS2021), Journal of Physics: Conference Series, Vol. 2107, Issue 1, Pages 1-8, **2021** [[Link](#)]
6. M.A.A.C. Ali, B. Ilias, N. Abdul Rahim, S.A. Abdul Shukor, A.H. Adom, M.A.H. Saad, "A Review on the Stingless Beehive Conditions and Parameters Monitoring using IoT and Machine Learning", International Conference on Man Machine Systems (ICoMMS2021), Journal of Physics: Conference Series, Vol. 2107, Issue 1, Pages 1-8, **2021** [[Link](#)]
7. M.N.A. Bakar, A.H. Abdullah, N. Abdul Rahim, H. Yazid, N.S. Zakaria, S. Omar, W.M.F.W. Nik, N.A. Bakar, S.F. Sulaiman, M.I. Ahmad, K. Ahmad, N.M. Maliki, S.R. Romle, "Defects Detection Algorithm of Harumanis Mango for Quality Assessment Using Colour Features Extraction", International Conference on Man Machine Systems (ICoMMS2021), Journal of Physics: Conference Series, Vol. 2107, Issue 1, Pages 1-8, **2021** [[Link](#)]
8. S.O. Atiya, A.F. Salleh, N. Abdul Rahim, M.S. Salim, A. Saidatul, N. Omar, S. Hamzah, "Accelerometer-based Physical Fatigue Assessment in 400 Meter Running Event", AIP Conference Proceedings, Vol. 2339, Issue 1, **2021**.
9. H.M. Radzi, A.F. Salleh, N. Abdul Rahim, M.S. Salim, N. Omar, H. Sakeran, S.K. Nair, "Effect of Strength and Conditioning Trainings on Lower Limb Muscles Activity of High-Jumping Athletes, Intelligent Manufacturing and Mechatronics, Lecture Notes in Mechanical Engineering book series (LNME) , Springer, Pages 1127-1135, **2021**
10. M.N. Abu Bakar, A.H. Abdullah, N. Abdul Rahim, H. Yazid, F.S.A. Saad, K. Ahmad, "Development of Ripeness Indicator for Quality Assessment of Harumanis Mango by using Image Processing Technique", IOP Conference Series: Materials Science and Engineering, Vol. 932, Issue 1, **2020**
11. M.A. Markom, A.H. Adom, S.A. Abdul Shukor, N. Abdul Rahim, E.S. Mohd Muslim Tan, B. Ilias, "Improved KNN Scan Matching for Local Map Classification in Mobile Robot Localisation Application", IOP Conference Series: Materials Science and Engineering, Vol. 557, Issue 1, Pages 1-6, **2019**
12. A.S. Abdull Sukor, A. Zakaria, N. Abdul Rahim, L.M. Kamarudin, H. Nishizaki, "Abnormality Detection Approach using Deep Learning Models in Smart Home Environments", International Conference on Communications and Broadband Networking, Pages 22-27, **2019**.
13. H.A. Yousif, A. Zakaria, N. Abdul Rahim, A.F. Salleh, M. Mahmood, K.A. Alfarhan, L.M. Kamarudin, S.M. Mamduh, A.M. Hasan and M.K. Hussain, "Assessment of Muscles Fatigue Based on Surface EMG Signals Using Machine Learning and Statistical Approaches: A Review", IOP Conference Series: Materials Science and Engineering, Vol. 705, Issue 1, Pages 1-8, **2019**
14. W.W. Tai, B. Ilias, S.A. Abdul Shukor, N. Abdul Rahim and M.A. Markom, "A Study of Ultrasonic Sensor Capability in Human Following Robot System", IOP Conference Series: Materials Science and Engineering, Vol. 705, Issue 1, Pages 1-9, **2019**
15. S.N. Mohd Isa, S.A. Abdul Shukor, N. Abdul Rahim, I. Maarof, Z.R. Yahya, A. Zakaria, A.H. Abdullah and R. Wong, "Point Cloud Data Segmentation Using RANSAC and Localization", IOP Conference Series: Materials Science and Engineering, Vol. 705, Issue 1, Pages 1-8, **2019**

16. M.A. Abd Halim, M.T.A. Rahman, N. Abdul Rahim, A. Rahman, A.F.A. Hamid, N.A.M. Amin, "Analysis on Current Flow Style for Vehicle Alternator Fault Prediction", IOP Conference Series: Materials Science and Engineering, Vol. 670, Issue 1, Pages 1-5, **2019**
17. S.N. Mohd Isa, S.A. Abdul Shukor, N.A. Rahim, I. Maarof, Z.R. Yahya, A. Zakaria, A.H. Abdullah, R. Wong, "Orientation-Based Pairwise Coarse Registration with Markerless Terrestrial Laser Scans", International Archives of the Photogrammetry, Remote Sensing & Spatial Information Sciences, Pages 425-432, **2019**
18. H.A. Yousif, N. Abdul Rahim, A.F. Salleh, A. Zakaria, K.A. Alfarhan and M. Mahmood, "A Study of Lower Limb Muscles Fatigue during Running Based on EMG Signals", IEEE International Conference on Sensors and Nanotechnology, Pages 1-4, **2019**
19. A.M. Ali, S.A. Abdul Shukor, N.A. Rahim, Z.M. Razlan, Z.A.Z. Jamal, K. Kohlhof, "IoT-based Smart Air Conditioning Control for Thermal Comfort", IEEE International Conference on Automatic Control and Intelligent Systems (I2CACIS), Pages 289-294, **2019**
20. M.A. Markom, A.H. Adom, S.A. Abdul Shukor, N. Abdul Rahim, E.S. Mohd Muslim Tan, B. Ilias, "Improved KNN Scan Matching for Local Map Classification in Mobile Robot Localisation Application", IOP Conference Series: Materials Science and Engineering, Vol. 557, Issue 1, Pages 1-6, **2019**
21. A.S. Abdull Sukor, A. Zakaria, N. Abdul Rahim, "Activity recognition using accelerometer sensor and machine learning classifiers", International Colloquium on Signal Processing & Its Applications (CSPA), Pages 233-238, **2018**
22. W.M. Nooriman, A.H. Abdullah, N. Abdul Rahim, K. Kamarudin, "Development of wireless sensor network for Harumanis Mango orchard's temperature, humidity and soil moisture monitoring", Symposium on Computer Applications & Industrial Electronics (ISCAIE), Pages 263-268, 2018
23. B. Ilias, S.A. Abdul Shukor, A.H. Adom, N. Abdul Rahim, M.F. Ibrahim, S. Yaacob, "Indoor Mobile Robot Localization using KNN", IEEE International Conference on Control System, Computing and Engineering (ICCSCE), **2017**
24. A.N. Norali, A.H. Abdullah, Z. Zakaria, N. Abdul Rahim, S.K. Nataraj, "Human Breathing Assessment using Electromyography Signal of Respiratory Muscles", International Conference on Control System, Computing and Engineering (ICCSCE), Pages 1, **2017**
25. A.N Norali, A.H Abdullah, Z. Zakaria, N. Abdul Rahim, V. Vijean, S.K. Nataraj, "Classification of human breathing task based on electromyography signal of respiratory muscles", International Colloquium on Signal Processing & its Applications (CSPA), Pages 196-201, **2017**
26. A.H. Abdullah, S.A. Shukor, M.S. Kamis, A.Y.M. Shakaff, A. Zakaria, N. Abdul Rahim, S.M. Mamduh, K. Kamarudin, F.S.A. Saad, M.J. Masnan, H. Mustafa, "Calibration of an electronic nose for poultry farm", Pages 1, **2017**
27. K. A. A. Aziz, A. F. Salleh, N. Abdul Rahim, M. H. M. Som, H. Sakeran, "Influence of Synchronized Dead Point Elimination Crank on Cyclist Muscle Fatigue", 2nd International Conference on Green Design and Manufacture (IConGDM 2016), Pages 1-6, **2016**
28. N. Abdul Rahim, Paulraj M.P., A.H. Adom, S.A.A. Shukor and M.H. Masnan, "Multi-Classifer System for Moving Vehicles Noise Classification based on K-Nearest Neighbor", Proceeding of the 2015 International Symposium on Advanced Engineering (**ISAE 2015**) - **Best Paper Award**
29. A.H. Abdullah, A.H. Adom, A.Y.M. Shakaff, M.J. Masnan, A. Zakaria, N.A. Rahim, O. Omar, "Classification of Malaysia Aromatic Rice using Multivariate Statistical Analysis", International Conference on Mathematics, Engineering and Industrial Applications 2014 (ICoMEIA **2014**).
30. Tan Hui Ling, S Ahmad Faizal, Norasmadi Abdul Rahim, Wan Mohd Zuki, "Feature Extraction of Knee Joint Vibroarthrographic (VAG) Signal Using Statistical Means", Applied Mechanics and Materials, Pages 832-835, November **2014** (ISSN: 1662-7482).
31. Mohamad Asyraf Faris Abdol Aziz, Ahmad Faizal Salleh, Sukhairi Sudin, Fezri Aziz, Ali Yeon Mohamad Shakaff, Mohammad Shahril Salim, Norasmadi Abdul Rahim, "Athlete overtraining

- monitoring system”, Proceedings of the International Colloquium on Sports Science, Exercise, Engineering and Technology 2014 (ICoSSEET **2014**), Pages 209-217.
32. M.H.M. Razali, N. Azmi, A. Zakaria, L.M. Kamarudin, S.M. Mamduh, K. Kamarudin, S.A.A. Shukora, A.Y.M. Shakaff, N. Abdul Rahim, F.S.A. Saad, “Sound Analyser for Bioacoustic Monitoring System using LabVIEW”, **2014** International Conference on Computer, Communications, and Control Technology (I4CT), Pages 434-437.
  33. R. Visvanathan, S. M. Mamduh, K. Kamarudin, M.H.M. Razali, A.S.A. Yeon, A. Zakaria, L.M Kamarudin, S.A.A. Shukor, A.Y.M. Shakaff, F.S.A. Saad, N. Abdul Rahim, “Multi Channel Ultrasonic Sensing System for Wall Features Extraction”, **2014** 2nd International Conference on Electronic Design (ICED), Pages 351-355.
  34. N. Abdul Rahim, Paulraj M P, A. H. Adom, “Heterogeneous Multi-Classifer for Moving Vehicle Noise Classification”, International Conference on Intelligent System and Control (ISCO’2013), 4-5 Jan **2013**, Coimbatore, Tamilnadu, India.
  35. N. Abdul Rahim, Paulraj M P, A. H. Adom, “Classification of Moving Vehicle using Heterogeneous Multi-Classifiers”, First IEEE International Conference on Innovations in Communication, Information and Computing (ICICIC’13), January, 9-11, **2013** at Sasurie College of Engineering, India.
  36. A.H. Ismail, M. Nasir Ayob, Thum Kaihao, Hassrizal H.B., M.S.M Hashim, N. Abdul Rahim, M.S. Muhamad Azmi, M. Azri Aziz, Shahrman A.B., Khairulnizam WAN, “Investigation of Homogeneous Multi Robots Communication via Bluetooth”,**2012** IEEE Symposium on Computer Applications and Industrial Electronics (ISCAIE2012).
  37. N. Abdul Rahim, Paulraj M P, A. H. Adom, S. Sathish Kumar, “Time-Domain Approach for Moving Vehicle Classification using Homogeneous Multi-Classifiers”,International Conference on Computing Techniques, Embedded Systems and Drives (ICCED**2012**)
  38. N. Abdul Rahim, Paulraj M P, A. H. Adom, S. Sathish Kumar, “Classification of Moving Vehicle using Homogeneous Multi-Classifiers”,International Conference on Computational Intelligence and Information Technology (ICCIIT**2012**)
  39. N. Abdul Rahim, Paulraj M P, A. H. Adom, S. Sathish Kumar, “Adaptive Boosting for Moving Vehicle Classification using Knn Classifier”,Regional Economic Development through Science, Technology and ART, (REDSTAR**2012**).
  40. N. Abdul Rahim, Paulraj M P, A. H. Adom, S. Sathish Kumar, “Neural Network Ensembler for Moving Vehicles Classification”, 2011 Engineering Post Graduate Research Conference (ENGGPOS**2011**)
  41. N. Abdul Rahim, Paulraj M P, A. H. Adom, S. Sathish Kumar, “Moving Vehicle Noise Classification using Multiple Classifiers”, 2011 IEEE Student Conference on Research and Development (SCoReD**2011**)
  42. I.M. Yassin, M.N. Taib, M.Z.A. Aziz, N.A. Rahim, N.M. Tahir, A. Johari, “Identification of DC Motor Drive System Model using Radial Basis Function (RBF) Neural Network”, **2011** IEEE Symposium on Industrial Electronics & Applications (ISIEA2011).
  43. N. Abdul Rahim, Paulraj M.P., A.H. Adom, S. Sundararaj, “Moving Vehicle Noise Classification using Backpropagation Algorithm” International Colloquium on Signal Processing and its Applications (CSPA **2010**).
  44. I.M. Yassin, M.N. Taib, N.A. Rahim, M.K.M. Salleh, H.Z. Abidin, “Particle Swarm Optimization for NARX structure selection – Application on DC motor model”, 2010 IEEE Symposium on Industrial Electronics & Applications (ISIEA**2010**).
  45. H. Mansor, A.H. Adom, N.A. Rahim, “Development of Swarming Algorithm for Mobile Robots” International Postgraduate Conference On Engineering (IPCE**2010**).
  46. Hamid M.H.A. , Adom A.H. , Rahim N.A. , Rahiman M.H.F. , “Navigation of Mobile Robot using Global Positioning System (GPS) and Obstacle Avoidance System with Commanded Loop Daisy Chaining Application Method”, International Colloquium on Signal Processing and its Applications (CSPA **2009**).

47. M.H.A. Hamid, A.H. Adom, N.A. Rahim & M.H.F. Rahiman, "Multi-Terrain Mobile Robot in Agricultural Application with GPS Mapping and Obstacle Avoidance System", International Conference on Robotics, Vision, Signal Processing, & Power Applications (RoViSP **2009**).
48. Ihsan M. Yassin, Norasmadi A. Rahim and Mohd N. Taib, "NARMAX Identification of DC Motor Model using Particle Swarm Optimization", International Colloquium on Signal Processing and its Applications (CSPA **2008**)
49. M.H.A. Hamid, A.H. Adom, M.H.F. Rahiman, N. Abdul Rahim, Abu Hassan Abdullah "Autonomous Mobile Robot (AMRSBot) with GPS Navigation and Ultrasonic Obstacle Avoidance System", (BICET**2008**)
50. M.A.A. Halim, L.J. Jia, A.H. Adom and N.A. Rahim, "System Identification for ARMAX Model via BCLS Method", The First International Conference on Control, Instrumentation and Mechatronics Engineering, **2007** (CIM07)
51. N. Abdul Rahim, M.N. Taib, A.H. Adom and M.A.A. Halim "Nonlinear System Identification for a DC Motor using NARMAX Model with Regularization Approach", The First International Conference on Control, Instrumentation and Mechatronics Engineering, **2007** (CIM07)
52. A. Mohamad, N. Abdul Rahim, S. A. Abdul Shukor and N. F. M. Nasir, "A Review of Fuel Cell Powered Mobile Robots", Conference on Applications and Design in Mechanical Engineering (CADME07), 25-26 October **2007**, Kangar, Malaysia
53. Nashrul Fazli Mohd Nasir, Ying Yang, Azizul Mohamad, Norasmadi Abdul Rahim and Ramachandran Nagarajan, "Preliminary Development Artificial Pancreas", International Conference on Engineering and ICT (ICEI-**2007**)
54. Salleh, Z. Mashor, M.Y. Noor, N.R.M. Aniza, S. Rahim, N.A. Wahab, A.S.W. Noor, S.S.M. Idris, F.M. Hasan, H, "Colour Contrast Enhancement Based on Bright and Dark Stretching for Ziehl-Neelsen Slide Images", Third International Conference on International Information Hiding and Multimedia Signal Processing (IIHMSP**2007**)
55. N.A. Rahim, M.N. Taib, A.H. Adom and M.Y. Mashor, "The NARMAX Model for a DC Motor using MLP Neural Network", International Conference on MAN-MACHINE System **2006** (ICoMMS 2006).
56. N.A. Rahim, M.N. Taib and M.I. Yusof, "Nonlinear System Identification for a DC Motor using NARMAX Approach", AsiaSense **2003**.