# ASRUL BIN ADAM

No. 82A, Jalan TPS 2/24, Taman Pelangi Semenyih 2 (Rafflesia),
43500 Semenyih, Selangor, MALAYSIA
☎ +6019-7902786
✉@ asruldm@gmail.com

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Asrul Adam received the B.Eng. and M.Eng. degrees in Electrical-Mechatronics and Electrical Engineering from Universiti Teknologi Malaysia (UTM), Malaysia, in 2009 and 2012, respectively. He completed his Ph.D in Signal and System from Faculty of Engineering, University of Malaya in 2017. He currently works as lecturer at Faculty of Manufacturing Engineering, Universiti Malaysia Pahang, Malaysia. His research interests include biomedical signals processing, artificial intelligent, machine learning, and optimization. He published 12 Scopus/ISI-WoS indexed journals, 17 international conferences, and one book chapter. He recently has 82 total citation and 5 *h*-index based on SCOPUS.

## EDUCATION

2013–2017    **PhD,** Signal and System, University of Malaya
Thesis: *Selection and Optimization of Peak Features for Event-related EEG Signals Classification*
Supervisor (s): Dr. Norrima Mokhtar (UM), Assoc. Prof. Dr. Zuwairie Ibrahim (UMP)

2009–2012    **Master of Engineering (Electrical),** Machine Learning, Universiti Teknologi Malaysia
Thesis: *Hybrid Artificial Neural Network- Naive Bayes Classifier for Solving Imbalanced Dataset Problems*
Supervisor: Dr. Zuwairie Ibrahim

2006–2009    **Bachelor of Engineering (Electrical-Mechatronics)**, Universiti Teknologi Malaysia
Thesis: *Application of Particle Swarm Optimization for Robotic Drill Route Problem*
Supervisor: Dr. Zuwairie Ibrahim

2003–2006    **Diploma in Electrical Engineering (Mechatronics)**, Universiti Teknologi Malaysia

## TEACHING AND RESEARCH INTERESTS

- Artificial Intelligences
- Optimization Algorithms
- Control System
- Machine Learning
- Biomedical Signal Processing
- Signal and System
- Pattern Recognition
- Automation and Robotics
- Microprocessor/Microcontroller
- Solar Tracking System

## TEACHING AND SUPERVISION EXPERIENCES

Present    **Full-Time Lecturer,** Faculty of Manufacturing Engineering Malaysia, Universiti Malaysia Pahang
Courses: Electronic Engineering 2, Analog Electronic

2016–2017    **Full-Time Lecturer,** Manipal International University (MIU), Malaysia (Private University)
Courses: Measurement and Instrumentation, Electromechanical Energy Conversion, Electrical Drives and Control, Microprocessor Lab, Control System Lab

2016–2017    **FYP Supervisor,** Manipal International University (MIU), Malaysia (Private University)
Project title:
1) Designing an Off-Grid Solar PV Monitoring System Via LabVIEW
2) Design And Develop An MPPT Charge Controller for Solar Tracking System

2016–2017    **Capstone Supervisor,** Manipal International University (MIU), Malaysia (Private University)
Project title:
1) Design and Testing of A Prototype Solar Dripping Irrigation System using Moisture Sensors

2009–2016    **Part-Time Tutor,** Wawasan Open University (Private University)
Courses: Analog Circuit, Microprocessor, Control System, Signal and System, Process Control and Instrumentation

2009–2016    **Project Supervisor,** Wawasan Open University (Private University)
Project title:
1) Tan Ah Chuan (2012), Home Automation and Security monitoring system.

2) Peck Chin How (2013), Speed Control of DC Motor using Microcontroller PIC16F877A.
3) Ong Eng Chieh (2013), A Gravitational Search Algorithm Approach in PCB Holes Drilling Process.
4) Liew York Leong (2013), Intelligent Traffic Light Control System using Motorola 68HC11 Microcontroller.
5) Goh Xian Yuan (2014), Development of Ultrasonic Smart Car Using Arduino Microcontroller Interface.
6) Ooi Li Hui (2014), A Fuzzy Logic Traffic Light System for Educational Level.
7) Chan Heng Tong (2014) Development of Six-DOF Robotic Arm for Colour Product Sorting.
8) Zarhanizan Zakaria (2015), Mobile Phone Detector in Silent Area.
9) Ooi Tiong Wey (2015), Application of ATMEGA16 Microcontroller for LPG Gas Detector with GSM Module.
10) Guna Seelan A/L Maniam (2015), Ultrasonic Security System with SMS Notification.

## PROFESIONAL OF MEMBERSHIP BODIES

2012-present    Institute of Engineers Malaysia (IEM), Graduate Member (G49869)

2011-present    Board of Engineers Malaysia (BEM), Graduate Engineer (69286A)
International Association of Engineers (IAENG), Member (113309)

## ADMINISTRATIVE DUTIES

1) EAC secretariat for Bachelor Electronic (Communication) Engineering, Department of Electrical and Electronic Engineering, November 2016.
2) EAC secretariat for Bachelor Electrical and Electronic Engineering, Department of Electrical and Electronic Engineering, March 2017.
3) Industrial Training Coordinator, 2016-present.
4) Industrial Visit Coordinator (TNB-ILSAS), December 2016.
5) Final Year Project Supervisor, 2016-present.
6) Capstone Supervisor, 2017-present.
7) Chief Invigilator of Final Exam session, January 2017
8) Industrial Visit Coordinator (Putrajaya Power Station), April 2017.

## PUBLICATIONS
### International Journals

1) **Asrul Adam**, Mohd Ibrahim Shapiai, Zuwairie Ibrahim, Marzuki Khalid and Lee Wen Jau, "Development of a Hybrid Artificial Neural Network - Naive Bayes Classifier for Binary Classification Problem of Imbalanced Datasets", *ICIC Express Letters, ICIC International*, Vol. 5, No. 9(A), pp. 3171-3175, September 2011. Indexed by SCOPUS.

2) Muhammad Salihin Saealal, Amar Faiz Zainal Abidin, **Asrul Adam**, Nur Anis Nordin, Zulkifli Md. Yusof and Zuwairie Ibrahim, "An Ant Colony System For Routing in PCB Holes Drilling Process", *International Journal of Innovative Management, Information and Production (IJIMIP)*, Vol. 3, No. 1, pp. 50-56, March 2012.

3) Zulkifli Md. Yusof, Amar Faiz Zainal Abidin, **Asrul Adam**, Kamal Khalil, Jameel Abdulla Ahmed Mukred, Mohd Saberi Mohamad, M. Khalil Hani, and Zuwairie Ibrahim, "A Two-Step Binary Particle Swarm Optimization Approach for Routing in VLSI", *ICIC Express Letters, ICIC International*, Vol. 6, No. 3, pp. 771-776, March 2012. Indexed by SCOPUS.

4) **Asrul Adam**, Mohd Ibrahim Shapiai, Lim Chun Chew, Zuwairie Ibrahim, Lee Wen Jau, Marzuki Khalid and Junzo Watada, "A Two-Step Supervised Learning Artificial Neural Network for Imbalanced Dataset Problems", *International Journal of Innovative Computing, Information and Control* (IJICIC), Vol. 8, No. 5, May 2012. (ISI-WoS indexed, IF 1.667).

5) Jameel A. A Mukred, Zuwairie Ibrahim, Ismail Ibrahim, **Asrul Adam**, Khairulnizam Wan, Zulkifli Md. Yusof, and N. Mohktar, " A Binary Particle Swarm Optimization Approach to Optimize Assembly Sequence Planning", *Advanced Science Letters*, Vol. 13, pp. 732-738, June 2012. (ISI-WoS indexed, IF 1.253).

6) **Asrul Adam**, M.I. Shapiai, M.Z. Mohd Tumari, M.S. Mohamad, M. Mubin, Feature Selection and Classifier Parameters Estimation for EEG Signals Peak Detection Using Particle Swarm Optimization, *The Scientific World Journal*, 2014, 13. (ISI-WoS indexed, **Q1**, IF: 1.732).

7) **Asrul Adam**, Z. Ibrahim, N. Mokhtar, M.I. Shapiai, M. Mubin, Evaluation of Different Peak Models of Eye Blink EEG for Signal Peak Detection using Artificial Neural Network, *Neural Network World Journal*. Vol. 26(1). pp. 67-97. 2016. (ISI-WoS indexed, **Q4**, IF: 0.48).

8) Mohd Ibrahim Shapiai, Zuwairie Ibrahim, **Asrul Adam**, Norrima Mokhtar, Incorporating Prior Knowledge in Solving System Identification Problem with Insufficient Samples Based on Pareto Optimality Concept, *ICIC Express Letters, ICIC International*, Vol. 10, No. 1, pp. 21-26, January 2016. Indexed by SCOPUS.

9) **Asrul Adam**, Z. Ibrahim, N. Mokhtar, M.I. Shapiai, P. Cumming, M. Mubin, Evaluation of Different Time Domain Peak Models using Extreme Learning Machine-based Peak Detection for EEG signal, SpringerPlus, 2016 Jul 11, 5(1):1036. (ISI-WoS indexed, **Q2**, IF: 0.982).

10) **Asrul Adam**, Z. Ibrahim, N. Mokhtar, M.I. Shapiai, M. Mubin, I. Saad, Feature Selection using Angle Modulated Simulated Kalman Filter for Peak Classification of EEG Signals, SpringerPlus, 2016 Sept 15, 5(1):1580. (ISI-WoS indexed, **Q2**, IF: 0.982).

11) M.I. Shapiai, Z. Ibrahim, **Asrul Adam**, Pareto Optimality Concept for Incorporating Prior Knowledge for System Identification Problem with Insufficient Sample, Arabian Journal for Science and Engineering, pp. 1-14, 2016. (ISI-WoS indexed, **Q3**, IF: 0.728,)

12) **Asrul Adam**, Z. Ibrahim, N. Mokhtar, M.I. Shapiai, M. Mubin, I. Saad, Improving EEG signal peak detection using feature weight learning of a neural network with random weights for eye event-related applications, Sadhana (ISI-WoS indexed, **Q4**, IF: 0.465.)

## International Conferences

1) **Asrul Adam**, Amar Faiz Zainal Abidin, Zuwairie Ibrahim, Abdul Rashid Husain, Zulkifli Md Yusof, Ismail Ibrahim, "A Particle Swarm Optimization Approach to Robotic Drill Route Optimization", *Fourth Asia International Conference on Mathematical/Analytical Modelling and Computer Simulation (AMS 2010)*, pp.60-64, Kota Kinabalu, Sabah, Malaysia, 2010.

2) **Asrul Adam**, Ibrahim Shapiai, Zuwairie Ibrahim, Marzuki Khalid, Lim Chun Chew, Lee Wen Jau, Junzo Watada, "A Modified Artificial Neural Network Learning Algorithm for Imbalanced Data Set Problem", *2nd International Conference on Computational Intelligence, Communication Systems and Networks (cicsyn 2010)*, pp.44-48, Liverpool, United Kingdom, 2010.

3) M. Nasir Ayob, Zulkifli Md Yusof, **Asrul Adam**, Amar Faiz Zainal Abidin, Ismail Ibrahim, Zuwairie Ibrahim, Shahdan Sudin, N. Shaikh-Husin, M. Khalil Hani, "A Particle Swarm Optimization Approach for Routing in VLSI", *2010 2nd International Conference on Computational Intelligence, Communication Systems and Networks (cicsyn 2010)*, pp.49-53, Liverpool, United Kingdom, 2010.

4) **Asrul Adam**, Mohd Ibrahim Shapiai, Zuwairie Ibrahim, Marzuki Khalid. Artificial Neural Network - Naive Bayes Fusion for Solving Classification Problem of Imbalanced Dataset. *Proceedings of 4th International Conference on Modelling, Simulation and Applied Optimization (ICMSAO-2011).* pp. 868-872, Impiana KLCC Hotel and Spa Kuala Lumpur, Malaysia on April 19 – 21, 2011.

5) **Asrul Adam**, Mohd Ibrahim Shapiai, Zuwairie Ibrahim, Marzuki Khalid and Lee Wen Jau, "Development of a Hybrid Artificial Neural Network - Naive Bayes Classifier for Binary Classification Problem of Imbalanced Datasets", *Proceedings of Fourth International Symposium on Intelligent Informatics (ISII-2011)*, Qingdao, China on May 1-3,

6) Mohd Hafiz Othman, Amar Faiz Zainal Abidin, **Asrul Adam**, Zulkili Md Yusof, Zuwairie Ibrahim, Seri Mastura Mustaza, Lai Yee Yang. A Binary Particle Swarm Optimization Approach For Routing in PCB Holes Drilling Process. *First International Conference on Robotic & Automation System  (ICORAS 2011)*. International Training Centre TATIUC (ITC-TATIUC), Kemaman, Terengganu, Malaysia. 23-24 May 2011.

7) Hasrul Che Shamsudin, **Asrul Adam**, Mohd Ibrahim Shapiai, Zuwairie Ibrahim Mohd Ariffanan Mohd Basri and Marzuki Khalid.  An Improved Two-Step Supervised Learning Artificial Neural Network for Imbalanced Dataset Problems. *Third International Conference on Computational Intelligence, Modeling and Simulation (CIMSim 2011)*. pp. 108-113, Langkawi, Malaysia, 20-23 September 2011.

8) Zulkifli Md. Yusof, Tan Zhe Hong, Amar Faiz Zainal Abidin, Mohammad Nazry Abdul Salam**, Asrul Adam**, Kamal Khalil, Jameel Abdulla Ahmed Mukred, N. Shaikh-Husin, and Zuwairie Ibrahim, "A Two-Step Binary Particle Swarm Optimization Approach for Routing in VLSI with Iterative RLC Delay Model", *Third International Conference on Computational Intelligence, Modeling and Simulation (CIMSim 2011)*. pp. 63-67, Langkawi, Malaysia, 20-23 September

9) Lim Chun Chew, Mohd Ibrahim Shapiai, **Asrul Adam**, Kamal Khalil, Zuwairie Ibrahim, Lee Wen Jau, Marzuki Kahlid, Vladimir Pavlovic and Junzo Watada, "A Multiple Input Probabilistic Classifier for Imbalanced Dataset Problem in Semiconductor Manufacturing", *Proceeding of the International Symposium on Innovative Management, Information & Production (IMIP 2011)*, pp. 278-283, Otaru, Japan, 8-10 October 2011.

10) Muhammad Salihin Saealal, Amar Faiz Zainal Abidin, **Asrul Adam**, Nur Anis Nordin, Zulkifli Md. Yusof and Zuwairie Ibrahim, "An Ant Colony System For Routing in PCB Holes Drilling Process", *Proceeding of the International Symposium on Innovative Management, Information & Production (IMIP 2011)*, pp. 292-298, Otaru, Japan, 8-10 October 2011.

11) **Asrul Adam**, Lim Chun Chew, Mohd Ibrahim Shapiai, Lee Wen Jau, Zuwairie Ibrahim, Marzuki Khalid, "A Hybrid Artificial Neural Network-Naive Bayes for Solving Imbalanced Dataset Problems in Semiconductor Manufacturing Test Process", *Proceeding of the 11th International Conference on Hybrid Intelligent Systems (HIS 2011)*, pp. 133-138, Melaka, Malaysia, 5-8 December 2011.

12) Zulkifli Md. Yusof, Amar Faiz Zainal Abidin, **Asrul Adam**, Kamal Khalil, Jameel Abdulla Ahmed Mukred, Mohd Saberi Mohamad, M. Khalil Hani, and Zuwairie Ibrahim, "A Two-Step Binary Particle Swarm Optimization Approach for Routing in VLSI, *Proceedings of the Sixth International Conference on Innovative Computing, Information and Control (ICICIC 2011)*, Kitakyushu, Japan, 22-24 December 2011.

13) **Asrul Adam**, Z. Ibrahim, N. Mokhtar, M.I. Shapiai, M.Z. Mohd Tumari, M. Mubin, Feature Selection and Classifier Parameter Estimation for EEG Signal Peak Detection using Gravitational Search Algorithm, 4th International Conference on Artificial Intelligence with Applications in Engineering and Technology, IEEE, Kota Kinabalu, Sabah, Malaysia, 2014, pp. 103-108.

14) Norhaizat Omar, Eng Chieh Ong, **Asrul Adam**, et. al., An Experiment Study of the Application of Gravitational Search Algorithm in Solving Route Optimization Problem for Holes Drilling Process, International Conference on Recent Treads in Engineering and Technology, 2014.

15) **Asrul Adam**, Z. Ibrahim, N. Mokhtar, M.I. Shapiai, M. Mubin, Dingle's Model-based EEG Peak Detection using a Rule-based Classifier, in: 2015 International Conference on Artificial Life and Robotics, Oita, JAPAN, 2015, pp. 53.

16) M.I. Shapiai, Z. Ibrahim, **Asrul Adam**, N. Mokhtar, Incorporating Prior Knowledge in Solving System Identification Problem with Insufficient Samples Based on Pareto Optimality Concept, 10th International Conference on Innovative Computing, Information and Control, Dalian China, 2015.

17) Clarence Agustine Tee, PLNG RAO, **Asrul Adam** et al., **"**Systolic Blood Pressure Peak Classification of PPG Signals using Time-domain Features", 3rd International Conference on Computational Methods in Engineering and Health Sciences (ICCMEH- 2016), December 17-18, Tobata Campus, Kyushu Institute of Technology, Japan.

**Book Chapter**
1) **Asrul Adam**, Lim Chun Chew, Ibrahim Shapiai, Zuwairie Ibrahim, Lee Wen Jau, Marzuki Khalid, Junzo Watada. A Two Step Learning Artificial Neural Network for Solving an Imbalanced Dataset Problem in Semiconductor Manufacturing. Chapter 10. pp. 185-202. 2011 First Edition. Pusat Pengurusan Penyelidikan (RMC) & Penerbit UTM Press Universiti Teknologi Malaysia 81310 Skudai, Johor Darul Ta'zim, Malaysia.