



CURRICULUM VITAE

Dr. Sharafiz bin Abdul Rahim
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Education

PhD in Mechanical Engineering, 2018, Department of Mechanical Engineering, University of Sheffield, UK.

Thesis title *Investigating the Effect of Variable Mass Loading in Structural Health Monitoring from a Machine Learning Perspective*.

Master of Science (MSc) in Dynamics and Control, 2009, University of Bath, UK.

Bachelor in Mechanical Engineering (Hons), 2008, University of Bath, UK.

Areas of Interest

1. Structural Health Monitoring
2. Machine Learning
3. Big Data
4. Artificial Intelligence (pattern recognition, damage detection)
5. Vibration and Signal Processing
6. Algorithmic Trading

Professional Qualification/ Membership/ Affiliation

1. Graduate Member, Board of Engineers Malaysia (BEM).

Appointments

Position	Duration
1. Senior Lecturer, Department of Mechanical and Manufacturing Engineering, Faculty of Engineering, UPM	Jan 2020-present
<ul style="list-style-type: none"> Academic Coordinator II- Department of Mechanical and Manufacturing. 	1 st June 2021 – 31 st Dec 2023
<ul style="list-style-type: none"> Academic Advisor- Bachelor of Engineering in Mechanical Engineering. 	Dec 2019-present
<ul style="list-style-type: none"> Department Coordinator-ASEAN DATA SCIENCE EXPLORERS (ADSE) SESSIONS. 	12 th Feb 2020 – 11 th May 2020
<ul style="list-style-type: none"> Trainer for JKR CREaTE researchers- Vibration Measurement Using Arduino and Data Analytics. 	29-30 Sept 2020



- Team Supervisor- Innovate Malaysia Design Competition (Design Challenge) 2021. Dec 2020- Dec 2021

2. Machine Learning Engineer, Essiell Ltd, Brighton UK. March 2019 to August 2019
3. Academic Fellow, Department of Mechanical and Manufacturing Engineering, Faculty of Engineering, UPM. April 2014 to September 2019
4. Lecturer, Automotive Engineering Division, Malaysia France Institute, Universiti Kuala Lumpur. June 2011 to Jan 2014
5. Lecturer, Mechanical Engineering Department, Malaysia Spanish Institute, Universiti Kuala Lumpur. Dec 2009 to June 2011

Grants

1. Putra IPM Grant. Data Driven Vibration-Based Damage Detection System Using Machine Learning and Deep Neural Network. Total grant: RM 51,200. Period: 17th August 2020 – 16th August 2023. *Status: Ongoing.*
2. JKR CREaTE Research Grant. Condition-Based Predictive Maintenance of Lifts System Using Internet Of Things (Iot) And Big Data Analytics. Total Grant: RM 250,000. Period: 24th May 2021-24th May 2023. *Status: Ongoing.*

Publications

Journals / Conference Proceedings

1. **SA Rahim**, Manson G, Azim, Data Clustering Model based on Gaussian Mixture Model and Expectation-Maximization Algorithm for Data-driven Structural Health Monitoring System, International Journal of Integrated Engineering (IJIE), ISSN: 2229-838X e-ISSN: 2600-7916, 2021. *Published*
2. **SA Rahim**, Manson G, Kernel Principal Component Analysis for Structural Health Monitoring and Damage Detection of an Engineering Structure under Operational Loading Variations, Journal of Failure Analysis and Prevention (6), 1981-1990, Springer, 2021. *Published*
3. **SA Rahim**, Manson G, Worden K, Investigating the effect of variable mass loading in structural health monitoring from a machine learning perspective, Ph.D Thesis, University of Sheffield, 2018. *Published*
4. **SA Rahim**, Manson G, Worden K., Data visualization approach for operational loading variations of an aircraft wing box using vibration-based damage detection, 8th European Workshop on Structural Health Monitoring, EWSHM 2016, 4, pp. 2893-2902. 2018. *Published*

5. **SA Rahim**, Manson G, Worden K., Principal component analysis and artificial neural network framework for damage detection strategy under varying operational loading conditions, Structural Health Monitoring 2017: Real-Time Material State Awareness and Data-Driven Safety Assurance - Proceedings of the 11th International Workshop on Structural Health Monitoring, IWSHM 2017, 1, pp. 520-526, 2017. *Published*
6. **SA Rahim**, J. M. Juraidi and Daut. A. Shahril., Investigate the Dynamic Behavior of an Automotive Exhaust System Structure Using Experimental Modal Analysis, Proceeding of International Conference on Automotive Innovation and Green Energy Vehicle, August 2014. *Published*
7. **SA Rahim**, J. M. Juraidi, Dynamic modeling of a damaged exhaust structure, Proceeding of Science and Engineering Technology National Conference 2013, June 2013. *Published*
8. **SA Rahim**, Frequency Shift in Tracking the Structural Integrity of Fixed Offshore Structures 9th ASEAN ANSYS Conference, Singapore, 14th May 2013. *Published*
9. **SA Rahim**, A. J. Hillis, Frequency Shift in Tracking the Damage of Fixed Offshore Structures, Journal of Applied Sciences, DOI:10.3923/jas.2011.1688.1697, Oct 2011. *Published*
10. Azim, **SA Rahim**, Development of Peri dynamic Model for Impact Test of Polypropylene and Polycarbonate, Springer Book Series: Structural Integrity Cases in Mechanical and Civil Engineering, ISSN: 2522-560X, 2021. *Published*
11. MSJ Singh, NAA Jalil, **SA Rahim**, ZA Zulkefli, H Hasini, Thermo-Economic Analysis of a Coal-Fired Power Plant (CFPP) Using Turbine Cycle Heat Rate and Plant Net Heat Rates at Various Operating Loads, Pertanika Journal of Science & Technology 30 (2) 2022. *Published*.
12. Singh, Manmit Singh Jasbeer; Jalil, Nawal Aswan Abdul; **SA Rahim**; Zulkefli, Zamir Aimaduddin; Hasini, Hasril; Heat Rate Deviation Analysis of a Coal-Fired Power Plant (CFPP) with the Influence of Applicable Coal Prices (ACP), 2022. *Published*
13. Y Ma, F Mustapha, MR Ishak, **SA Rahim**, M Mustapha, Data-driven Methods for Damage Detection and Identification of UAV: A Review, Journal of Aeronautics, Astronautics and Aviation 54 (4), 405-420 2022. *Published*
14. Azizi, Muhammad Azim; Ridhuan, Mohd Faiz Mohd; Zahari, Mohd Zakiyuddin Mohd; **SA Rahim**; Azman, Muhammad Amin; Peridynamic Model for Tensile Elongation and Fracture Simulations of Polymethyl Methacrylate Notched Specimens Applied Mechanics and Materials 909, Trans Tech Publications Ltd, Nov-28 2022. *Published*
15. Ma, Yumeng; Mustapha, Faizal; MR, Ishak; **SA Rahim** ; Mustapha, Mazli; Damage Identification Through a Vibration Based Data of a Quad-Rotor Unmanned Aerial Vehicle

(Uav) Using Convolutional Neural Networks (Cnns), Available at SSRN 4354049. 2022. *Published.*

16. Ma, Yumeng; Mustapha, Faizal; Ishak, Mohamad Ridzwan; **SA Rahim**; Mustapha, Mazli; Structural fault diagnosis of UAV based on convolutional neural network and data processing technology Nondestructive Testing and Evaluation, Taylor & Francis, Jan-20 2023. *Published.*

Supervisions

Master and Ph.D

1. Nithiyana a/l Salvadorai. GS55615. Master of Engineering Management (*Main Supervisor*). Thesis: Machine Health Monitoring and Fault Detection Using Artificial Neural Network. Feb 2021. *Status: Completed.*
2. Desmond Jayson A/L Stephen. GS56180. Master of Engineering Management (*Main Supervisor*). Thesis: Data Visualization of Milling Process with The Effects of Material Parameters Variation Using Principal Component Analysis. Feb 2021. *Status: Completed.*
3. Alireza Boldaji. GS53513. Master of Engineering Management (*Main Supervisor*). Thesis: Optimization of refining palm oil with neural network. July 2021. *Status: Completed.*
4. Hussein Hussein Abdussalam Mohammed. GS61006. Doctor of Philosophy in Mechanical Engineering (*Main Supervisor*). Thesis: Data-Driven Condition Monitoring Program for Gas Turbines. *Status: Ongoing.*
5. Deghhaninahrkhalaji Adnan. GS63312. Doctor of Philosophy in Mechanical Engineering (*Main Supervisor*). Thesis: Condition Monitoring of Mechanical Systems using Machine Learning. *Status: Ongoing.*
6. Xiong Qiaoqiao. GS58734. Doctor of Philosophy in Mechanical Engineering (*Co-supervisor*). Thesis: Development of Small Samples Real-Time Tiny Surface Defects Detection Method Based on Deep Learning. *Status: Completed.*
7. Ma Yumeng. GS58166. Doctor of Philosophy in Aerospace Engineering (*Co-supervisor*). Thesis: Damage detection and identification for Multi-rotor aircraft based on deep learning. *Status: Completed.*
8. Roziyanna Bt Ahmad. GS54472. Doctor of Philosophy in Manufacturing Systems Engineering (*Co-supervisor*). Thesis: Development of Augmented Reality (Ar) Model for On Job Training (OJT) In Medical Device Industry. *Status: Completed.*
9. Manmit Singh A/L Jasbeer Singh. GS56993. Doctor of Philosophy in Mechanical Engineering (*Co-supervisor*).



Thesis: Optimization of Coal Fired Power Plant Performance Management
Status: Completed.

Supervisions

Final Year Project

1. Muhammad Haziq bin Mohd Zaki. 192598. Bachelor of Mechanical Engineering.
Title: Fault detection and monitoring of electric motor bearings using Machine Learning algorithms.
Completed.
2. Suhrisman bin Aris. 193496. Bachelor of Mechanical Engineering.
Title: Damage Detection and Health Monitoring of a vibration signal using a Deep learning network.
Completed.

Academic Teachings

Bachelor's Program

1. EMM3528 Mechanical Vibrations (Credit hours: 3+0. Semester 2 2021/22).
2. EMM3132 Engineering Statistics (Credit hours: 3+0. Semester 1 2021/22).
3. EMM3105 Dynamics (Credit hours: 3+0. Semester 2 2019/20).
4. ECC3012 Engineering Mathematics II (Credit hours: 3+0. Semester 1 2020/21).
5. EMM3520 Control and Instrumentation (Credit hours: 3+0. Semester 1 2020/21).
6. EMM3810 Mechanical Engineering Laboratory III- Thermal fluids (Credit hours: 0+1. Semester 2 2020/21).
7. Noise, Vibration and Harshness (Bachelor in Automotive Engineering Technology, UniKL MFI)-
(Credit hours: 2+1. 2011 - 2013).