

# NUR FATHIAH BINTI WAZIRALILAH

Lecturer at Mechanical Engineering Department, Alfaisal University, Riyadh, Saudi Arabia.

**Ph.D. in Mechanical Engineering (Artificial Intelligence), UTM**

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**Date of Birth:** 25 November 1994, **Nationality:** Malaysian

**Google Scholar:** <https://scholar.google.com/citations?hl=en&user=hpVzB68AAAAJ>

**Research gate:** <https://www.researchgate.net/profile/Nur-Waziralilah>

**LinkedIn:** <https://www.linkedin.com/in/dr-nur-fathiah-waziralilah-186844100/>



## SUMMARY

Dedicated research engineer with fast-track Ph.D., experiences in artificial intelligence and mechanical area. Experiences in handling big data and small data using deep learning (deep neural networks). Keen determination and vivacious personality would be her strong points in succeeding in a task given and even surpass the current her. Have good communication skills and adapt easily to a new environment. Experiences in leading the university organisation while collaborating with other mechanical companies in organising events. Humble desire in learning more from the work environment, perform and able to contribute the best of her. Seek experience and self-improvement in the field ventured to make a professional career.

## PROFILE

- Awarded fast-track Ph.D. in Mechanical Engineering (Artificial Intelligence) from Universiti Teknologi Malaysia (UTM), #21 in Mechanical Engineering, World University Ranking 2021.
- Undergone Ph.D. immediately after bachelor's degree due to excellent performance in academic and final year project research.
- Published 8 papers, attended 3 international conferences and another 2 ISI journals are under process.
- Organized 2 international conferences (Engineering Applications of Artificial Intelligence Conference & International Symposium on Fluid Mechanics & Thermal Sciences).
- Supervised/Co-supervised undergraduate and postgraduate students (Master's degree) for many projects related to (Vibration and Noise, Mechanics and materials, and Deep Learning).
- Taught many mechanical and basic electrical courses for undergraduate students such as: Statics, **Dynamics**, Solid Mechanics, Fluid Mechanics, Workshop Practice, Thermodynamics, **Engineering Component Design**, Control Engineering, **Vibration and Noise**, Mechanic Machines and Vibration, Mechatronics, Heat Transfer, Laboratory, Control Engineering, Industrial Instrumentation and Metrology and Inspection.
- The current research focused on the application of deep learning in mechanical engineering applications (fault analysis) and renewable energy.
- Reviewer for IEEE Transactions on Instrumentation and Measurement.
- Reviewer for Transportation Safety and Environment Journal.

## EDUCATION

- **Doctor of Philosophy (Mechanical Engineering)** **Sept 2017-Sept 2020**  
Universiti Teknologi Malaysia (UTM), Malaysia.  
Thesis: Deep learning with sparse data in bearing fault diagnosis utilising a Siamese Neural Network.  
GPA: 4.0/4.0
- **Bachelor of Mechanical Precision Engineering** **Sept 2013-June 2017**  
Universiti Teknologi Malaysia (UTM), Malaysia.  
GPA: 3.87/4.00 (First Class Degree)

## Professional Experiences

<p><b>1. Adjunct Faculty of Mechanical Engineering</b></p> <ul style="list-style-type: none"> <li>▪ Teach material science laboratory.</li> <li>▪ Assisted in teaching advanced solid work.</li> <li>▪ Prepare study materials (notes, midterm, final exam) and review reports and assignment of students.</li> <li>▪ Produce papers in the application of artificial intelligence (AI) in mechanical engineering.</li> <li>▪ Involved in preparation of course specification.</li> </ul>	<p>Alfaisal University, Saudi Arabia</p>	<p>January 2022-Present</p>
<p><b>2. Independent Researcher and Teacher</b></p> <ul style="list-style-type: none"> <li>▪ Taught some mechanical courses for undergraduate and A-level students.</li> <li>▪ Prepare study materials (slide presentation, notes, quiz) and review assignments of students.</li> <li>▪ Produce papers in the application of artificial intelligence (AI) in mechanical engineering.</li> <li>▪ Joined King Saudi University research group (AI application in renewable energy).</li> </ul>	<p>Affiliation: Universiti Teknologi Malaysia</p>	<p>September 2020-January 2022</p>
<p><b>3. Ph.D. Researcher</b></p> <ul style="list-style-type: none"> <li>▪ Research work for a Ph.D. degree in Mechanical Engineering (Deep Learning, One-shot learning, Mechanical Diagnosis)</li> <li>▪ Supervise postgraduate students (Master students) in research and experiment.</li> <li>▪ Establish a bearing fault diagnosis model by the integration of Gabor transform and an improved architecture of CNNs that can assess bearing faults with high accuracy of more than 97%.</li> <li>▪ Publish related papers to artificial intelligence applications in the mechanical industry.</li> <li>▪ Worked with vibration sensors and industrial on-site testing.</li> </ul>	<p>Universiti Teknologi Malaysia</p>	<p>September 2017-September 2020</p>
<p><b>4. University Tutor</b></p> <ul style="list-style-type: none"> <li>▪ Supervise the undergraduate student during tutorial class and examination.</li> <li>▪ Assist professor and assistant professor in dealing with study materials.</li> <li>▪ Teaching assistant in Statics, Mechanics of Materials, Final Year Project for undergraduate, Vibration and Noise, Engineering component design, Control Engineering, and Industrial Instrumentation.</li> <li>▪ Experienced in project involving thermal sensor, vibration and sound sensor, Arduino and programming.</li> <li>▪</li> </ul>	<p>Universiti Teknologi Malaysia</p>	<p>September 2017-September 2020</p>
<p><b>5. Research Assistant (Data Analysis)</b></p> <ul style="list-style-type: none"> <li>▪ For Technical and Vocational Education and Training (TVET) applied for the research grant.</li> </ul>	<p>Mechanical Engineering Department, Politeknik Premier Sultan Salahuddin Abdul Aziz Shah</p>	<p>June 2019-December 2019</p>

<b>6. Research Engineer (Internship)</b> <ul style="list-style-type: none"> <li>▪ Worked on project predicting burst pressure of <i>Carbon Fibre Reinforced Pressure</i></li> <li>▪ Experiment on pressure vessel with the collaboration of the number one manufacturer of pressure vessel in Japan, Asahi.co.</li> </ul>	Saitama University, Saitama-Shi Japan	June 2016- September 2016
<b>7. Researcher (Short-Term)</b> <b>Japan- Asia Youth Exchange Program in Science, Sakura Exchange Program in Science</b> <ul style="list-style-type: none"> <li>▪ Studied MAGLEV, magnetic levitation (Used in high-speed train in Japan).</li> <li>▪ Implemented JMAG software in magnetic fields analysis and Computer-Aided Design for prototyping in CAD software.</li> </ul>	Tokyo City University, Tokyo Japan	July 2015 – August 2015

### PUBLICATIONS

1. **Waziralilah, N. F.**, Abu, A., Lim, M. H., Quen, L., & Elfakarany, A. (2022). Vanquishing Data Scarcity in Real Bearing Fault Diagnosis Utilising One-Shot Learning Approach. (Processing).
2. **Waziralilah, N. F.**, Abu, A., Lim, M. H., Quen, L., & Elfakarany, A. (2022). Deep Learning with Sparse Data in Bearing Fault Diagnosis Utilising a Siamese Neural Network. (Processing).
3. **Waziralilah, N. F.**, Abu, A., Lim, M. H., Quen, L., & Elfakarany, A. (2019). Bearing fault diagnosis employing Gabor and augmented architecture of convolutional neural network. *Journal of Mechanical Engineering and Sciences*, 13(3), 5689 - 5702. DOI:10.15282/jmes.13.3.2019.29.0455.
4. **N. Fathiah Waziralilah**, et al. (2019). A Review on Convolutional Neural Network in Bearing Fault Diagnosis. *MATEC Web Conf.* 255 06002 (2019). DOI: 10.1051/mateconf/201925506002.
5. **N. Fathiah Waziralilah** et al. (2018). Suppression of Structure-Borne Noise in a Rectangular Enclosure. *IOP Conf. Ser.: Mater. Sci. Eng.* 409 012019
6. **N. Fathiah Waziralilah**, et al. (2017). Experimental Analysis on Structure-Borne Noise in an Enclosure. *International Journal of Mechanical and Production Engineering (IJMPE)*, pp. 76-80, Volume-5, Issue-5.
7. Unuh, Mohd Hishamuddin & Muhamad, Pauziah & **Waziralilah, Nur** & Amran, Mohamad. (2019). Characterization of Vehicle Smart Fluid using Gas Chromatography-Mass Spectrometry (GCMS). *Journal of Advanced Research in Fluid Mechanics and Thermal Sciences*. 55. 240-248.
8. Shukor, D.S., Aminudin, A., Hashim, U., **Fathiah, W.N.**, & Vikneshvaran, T. (2017). Active Noise Cancellation in the Rectangular Enclosure Systems. *World Academy of Science, Engineering and Technology, International Journal of Aerospace and Mechanical Engineering*,
9. Alyaa, H., Aminudin, A., Zaw, T., **Fathiah, W.N.**, Vikneshvaran, T., & Shakirah, S. (2017). Noise Source Identification of Vacuum Cleaner Using Sound Pressure-Velocity (Pu) Probe
10. Vikneshvaran, Alyaa HU, **Fathiah WN**, Shakirah SD. (2017) Study on numerical analysis of high-rise building. *International Journal of Mechanical and Production Engineering (IJMPE)*

### AWARDS & CERTIFICATE

- **Certificate of Solidworks Associate for Mechanical Design** **March 2022**
- **Certificate of Excellence in Ph.D. Thesis**, Universiti Teknologi Malaysia **October 2017**
- **Vice-Chancellor Award**, Universiti Teknologi Malaysia **October 2017**
- **Dean Award**, Universiti Teknologi Malaysia **2014-2017**
- **Anugerah Kepujian Dekan** , Universiti Teknologi Malaysia **October 2017**  
Semester (II,IV,V,VI,VII),
- **Anugerah Puteri Bestari (Best Degree Award)**, Universiti Teknologi Malaysia Kuala Lumpur **August 2015**
- **The course of Japan-Asia Youth Exchange Program**, Japan Science and Technology Agency **March 2017**
- **UTM Professional Skill Certificate**,

Short courses conducted by UTM on How to Get Yourself Employed, ISO 9001:2008 Quality Management System Requirement, Occupational Safety Health & Environment (OSHE) and How to Manage Your Personal Finance

### SKILLS & TRAINING

**Python** : Proficient  
**Solid Work** : Proficient  
**Matlab, Octave** : Proficient  
**Autodesk AutoCAD** : Proficient  
**SIEMENS LMS** : Proficient  
**Msc Patran (FEM)** : Proficient  
**Msc Nastran (FEA)** : Proficient  
**Arduino** : Intermediate  
**C++** : Intermediate  
**ISO 9001:2008** : Proficient

### LANGUAGES

**Malay Spoken/Written** : Native  
**English Spoken/Written** : Proficient  
**Japanese Spoken/Written** : Intermediate  
**Arabic Spoken/Written** : Beginner

### REFERENCES

<b>1. Prof. Ts. Ir. Dr. Aminudin bin Abu</b> College Principal KSJ, Universiti Teknologi Malaysia Tel: +60172424122 Email:aminudin.kl@utm.my	<b>2. Assoc.Prof Ir. Dr. Lim Meng Hee</b> Senior Lecturer Mechanical Precision Engineering Tel: +60122246160 Email:mhlim.kl@utm.my	<b>3. Dr. Lee Kee Quen</b> Senior Lecturer Mechanical Precision Engineering Tel: +60126871052 Email:lkquen@utm.my
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