

**Human Resource Department**  
TNB Research,  
No. 1, Lorong Ayer Itam  
Kawasan Institusi Penyelidikan,  
43000, Kajang, Selangor,  
Malaysia

October 27, 2015

Dear Sir/Madam,

My name is Dickson Neoh. I have over 6 years of experience in robotics and embedded systems and 1 year experience in artificial intelligence systems. I am very much interested in applying to your company as a research engineer, if possible in the areas of my interests. I believe that I could provide a valuable service for your company, and that my abilities would suit the role you need filled perfectly.

I believe this for several reasons. Over the course of my studies and career, I have been actively involved in industrial projects during my studies in UNITEN. I have worked closely with TNBR on projects which involve the elements of robotics and inspections. To name a few, I was actively involved in designing a boiler header inspection robot via visual inspection, and currently I am also involved in the a new project to design an inspection robot to enter boiler tubes. I am extremely well versed in designing electronic systems for custom applications as well as programming them to function as a whole.

I have also proven myself to be a valuable researcher as far as my track record in UNITEN as a student and research assistant goes. My works has been published through local and international conferences and journal proceedings by renowned publisher such as IEEE, Elsevier, Springer, just to name a few. My skill base and research capability makes me a particularly strong candidate for this job role.

I would love to have the opportunity to interview with your company, and explain my capabilities in more detail. I am certain that you are very busy, and would happily interview at your convenience. I can be reached at 013-3250-827 any time of normal working day, including weekends. Thank you very much for your time and consideration.

Sincerely yours,

**Dickson Neoh**

*Attached: curriculum vitae*



# Dickson Neoh

## Curriculum Vitae

### Education

2012–2015 **Master of Electrical Engineering (MEE)**, *Universiti Tenaga Nasional*, Malaysia, CGPA – 4.00.

2007–2012 **Bachelor of Electrical and Electronics Engineering (BEEE)**, *Universiti Tenaga Nasional*, Malaysia, CGPA – 3.71.  
First Class Honours

Specialized in Robotics, Embedded Systems and Artificial Intelligence with Big Data

### Masters Thesis

Title Behavior Recognition of Humanoid Robots using Long Short-Term Memory

Supervisors Associate Professor Dr. Khairul Salleh Mohamed Sahari & Professor Dr. Loo Chu Kiong

Description This thesis explored the idea of recognizing the behavior of humanoid robots using a Long Short-Term Memory, a variation of recurrent neural networks.

### Bachelors Thesis

Title Modular Motor Driver with Torque Control for Gripping Mechanism

Supervisors Zafri Baharuddin & Syed Sulaiman Kaja Mohideen

Description This thesis explored the idea of building a torque control DC motor driver using PWM techniques with PID algorithms.

### Experience

October 2015–Present **Research Engineer**, *Center for Advanced Mechatronics and Robotics*, Universiti Tenaga Nasional, Malaysia.

Detailed Achievements:

- Developed automatic number plate recognition (ANPR) pipeline using convolutional neural networks (CNN).
- Developed RFID based crowd attendance system using Raspberry Pi and Arduino controller coupled with MySQL database system.
- Learned to create intuitive graphical user interface (GUI) using open source tools with free licensing for commercialization of product.

- 2012–**Research Assistant**, *Center for Advanced Mechatronics and Robotics*, Universiti Tenaga Nasional, Malaysia.
- 2015 Detailed Achievements:
- Developed algorithm to classify robot behavior using recurrent neural networks (RNN) with Long Short-Term Memory (LSTM) architecture.
  - Worked with machine vision and autoencoder networks.
  - Learned to use python scripts in Linux operating system.
  - Programmed the NAO humanoid robot.
  - Learned to use the Robot Operating System (ROS).
  - Developed educational workshop robotics kits for students of primary, secondary and university students age range.
  - Developed boiler header inspection robots with using live vision inspection.
  - Learned to design embedded controllers using Microcip PIC, Arduino, Rapberry Pi microcontroller boards.
- 2011–2012 **Final Year Project**, *Universiti Tenaga Nasional*, Malaysia.
- Detailed Achievements:
- Developed torque-control algorithms for DC motors using PWM techniques.
  - Developed PID algorithms for general robot gripping mechanism.
  - Learned to program the Arduino/PIC series microcontroller.
- 2010–2011 **Summer Intern**, MYROBOTZ ENTERPRISE, Malaysia,
- Detailed Achievements:.
- Organized robotics workshop for school students.
  - Designed and develop custom use printed circuit boards (PCB).
- 2007–2010 **Mobile Robotics Club**, *Universiti Tenaga Nasional*, Malaysia.
- Detailed Achievements:
- Developed motherboard controller and printed circuit boards for mobile robots.
  - Learned to program the AVR microcontollers for mobile robot tasks including maneuverings, gripping mechanisms.
  - Developed algorithm for line-following robot, obstacle avoiding robot, etc.

## Awards

- 2012 Recipient of the Yayasan Tenaga Nasional Scholarship for Postgraduate (Masters) Studies.
- 2007 Recipient of the Yayasan Tenaga Nasional Scholarship for Undergraduate Studies.
- 2002 Recipient of the Tenaga Nasional Berhad Scholarship award for Secondary Education.

## Computer skills

- Basic Visual Basic.NET, C#, AVR microcontrollers
- Intermediate L<sup>A</sup>T<sub>E</sub>X, OpenOffice, Linux, Matlab, C++, Robot Operating System (ROS), MySQL
- Advanced Computer Hardware and Support, PYTHON, Arduino, Microcip PIC , Microsoft Office, Microsoft Windows, Basic-C

## Languages

- |          |                     |   |
|----------|---------------------|---|
| English  | <b>Mothertongue</b> | <i>Fluent in speaking and proficient in writing</i> |
| Malay    | <b>Advanced</b>     | <i>Fluent in speaking and proficient in writing</i> |
| Mandarin | <b>Intermediate</b> | <i>Conversationally fluent</i>                      |

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## Publications

- [1] Adzly Anuar, Maryam Huda Ahmad Phesal, Azrul Abidin Zakaria, Goh Chin Hock, Sivadass Thiruchelvam, Dickson Neoh Tze How, Muhammad Fahmi Abdul Ghani, and Khairul Salleh Mohamed Sahari. Learning basic mechatronics through helicopter workshop. *International Journal of Asian Social Science*, 4(2):320–325, 2014.
- [2] Dickson Neoh Tze How, Mohd Zafri Baharuddin, Syed Sulaiman Kaja Mohideen, Khairul Salleh Mohamed Sahari, and Adzly Anuar. Modular motor driver with torque control for gripping mechanism. *Procedia Engineering*, 41:1476–1482, 2012.
- [3] Dickson Neoh Tze How, Chan Wai Keat, Adzly Anuar, and Khairul Salleh Mohamed Sahari. Robotic arm control based on human arm motion. In *The 8th International Conference on Robotic, Vision, Signal Processing & Power Applications*, pages 81–88. Springer, 2014.
- [4] Dickson Neoh Tze How, Khairul Salleh Mohamed Sahari, Adzly Anuar, Mohd Zafri Baharuddin, Muhammad Fahmi Abdul Ghani, and Mohd Azwan Aziz. Image acquisition system for boiler header inspection robot. In *The 8th International Conference on Robotic, Vision, Signal Processing & Power Applications*, pages 521–528. Springer, 2014.
- [5] Yuhuang Hu, Dickson Tze How Neoh, Khairul Salleh Mohamed Sahari, and Chu Kiong Loo. Learning sufficient representation for spatio-temporal deep network using information filter. In *System Integration (SII), 2014 IEEE/SICE International Symposium on*, pages 655–658. IEEE, 2014.
- [6] Dickson Neoh, Hu Yuhuang, Chu Kiong Loo, and Khairul Salleh Mohamed Sahari. Multiple sequence behavior recognition on humanoid robot using long Short-Term memory (LSTM). In *IEEE 2014 International Symposium on Robotics and Manufacturing Automation (IEEE-ROMA2014)*, Kuala Lumpur, Malaysia, dec 2014. IEEE.