# Dickson Neoh

*Curriculum Vitae*

## Education

2018–present **PhD. in Engineering**, *Universiti Tenaga Nasional*, Malaysia, Expected graduation in mid 2022.

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

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

## PhD. Thesis

Title State-of-Charge Estimation with Self-Supervised Time Series Transformer.

Supervisor M A Hannan, (PhD.)

Description This thesis explores the effectiveness of using deep learning algorithms to estimate state-of-charge (SOC) in the batteries of hybrid electric vehicles. The study conducts various in depth comparative analysis of state-of-the-art deep learning algorithms applied to charge estimation. The goal of the study is to develop a novel estimation algorithm capable of learning to estimate the remaining charge from the drivers' driving behaviors. This thesis proposes the use of self-supervised Transformer model to estimate SOC.

## Master's Thesis

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

Supervisors Khairul Salleh Mohamed Sahari (PhD.) & Loo Chu Kiong, (PhD.)

Description This thesis explored the idea of recognizing the behavior of humanoid robots using a Long Short-Term Memory (LSTM), a variation of recurrent neural networks. The LSTM network is shown capable of classifying robotic maneuvers from joint angle data.

## Bachelor's Thesis

Title Modular Motor Driver with Torque Control for Gripping Mechanism.

Supervisors Zafri Baharuddin (PhD.) & Syed Sulaiman Kaja Mohideen.

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

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## Experience

May 2016–Present
**Lecturer**, *College of Engineering*, Universiti Tenaga Nasional, Malaysia.
Undergraduate level courses taught:
- Digital Logic Design (EEEB1034).
- Digital Logic Design Lab (EEEB1041).
- Random Process (EEEB383).
- Microprocessor Systems (EEEB373).
- Microprocessor Systems Lab (EEEB371)

Diploma level courses taught:
- Microcontroller & Interfacing Lab (EEED251).
- Introduction to Microcontrollers (EEED253).
- Digital Logic Lab (EEED2011).
- Digital Logic Laboratory (EEED141).

October 2015–April 2016
**Research Engineer**, *Center for Advanced Mechatronics and Robotics*, Universiti Tenaga Nasional, Malaysia.
Achievements:
- Developed automatic number plate recognition pipeline using deep convolutional neural networks.
- Developed RFID based crowd attendance system using Raspberry Pi and Arduino controller coupled with MySQL database system.
- Created intuitive graphical user interface using open source tools with free licensing for commercialization of product.

2012–October 2015
**Research Assistant**, *Center for Advanced Mechatronics and Robotics*, Universiti Tenaga Nasional, Malaysia.
Achievements:
- Developed algorithm to classify robot behavior using recurrent neural networks (RNN) with Long Short-Term Memory (LSTM) architecture.
- Worked with convolutional neural network and autoencoder deep learning models.
- Learned to use python scripts in Linux operating system.
- Programmed the NAO humanoid robot.
- Learned to use the Robot Operating System (ROS).
- Developed robotics learning modules for students of primary, secondary and university students using PIC and Arduino microcontrollers.
- Developed boiler header inspection robots with using live vision inspection.
- Learned to design embedded controllers using Microchip PIC, Arduino, Raspberry Pi microcontroller boards.

## Skills and Proficiencies

Basic — Visual Basic.NET, C#, AVR microcontrollers

Intermediate — LaTeX, OpenOffice, Linux, Matlab, C++, Robot Operating System (ROS), MySQL

Advanced — Computer Hardware and Support, PYTHON, Arduino, Microchip PIC, deep learning frameworks (Tensorflow, Pytorch, FastAI, Keras, Caffe, Theano.)

## Professional Membership

Member — Institute of Electrical and Electronics Engineers (IEEE).

Graduate Engineer — Board of Engineers Malaysia (BEM).