

## **PhD Position (By Research)**

### **Project Areas:**

Deep learning, Machine learning, Artificial intelligence, Image processing, Medical image analysis

### **Lead Supervisor:**

Dr. Maxine Tan, School of Engineering

### **Position Details:**

This PhD appointment is based on a full-time mode of study. We are searching for a PhD student at the School of Engineering, Monash University Malaysia. The scholarship is offered on a competitive basis via ranking of applicant's academic merit. The scholarship covers full tuition fees (for PhD) and provisional arrangements will be made towards a monthly stipend (for PhD) for a three-year funded project.

### **Project Description:**

This project will focus on the development of new methods for applying artificial intelligence and deep learning in medical images (e.g., mammograms, CT scans, etc.) (please refer to the "Selection criteria for Doctor of Philosophy (PhD)" requirements below).

Are you keen to pursue your PhD studies in the areas of artificial intelligence and deep learning pertaining to medical images? Are you interested in writing software/programs to help medical doctors/radiologists in their clinical workflow? Are you interested in writing codes to assist doctors in diagnosing/detecting diseases, such as cancer? This PhD project gives you an opportunity to work on quantitative image analysis and medical image processing on lung computed tomography (CT), full-field digital mammography (FFDM) and/or other medical imaging modalities. The aim/objective is to write software to improve the overall standard of healthcare, as well as assist radiologists in their clinical routine/workflow.

**Project Abstract:** The current imaging modalities are proceeding to higher and higher resolutions/details, such as two-dimensional (2D) X-ray to 3D computed tomography (CT) imaging for lung cancer screening/diagnosis. Higher resolution imaging and the shortage of radiologists faced in many countries means that the current demands on

already-overworked radiologists are rapidly and significantly increasing. Thus, quantitative image analysis based methods and Computer-Aided Diagnosis (CAD) schemes are required to assist/help the radiologists by providing objective results/feedback in their assessment of medical images. This project will also analyse a new approach, namely deep learning based methods for the medical image processing field. The expected outcome is software that will improve on the current CAD schemes for lung CT, mammography, and/or other imaging modalities.

### **Responsibilities:**

Complete a PhD project in the specialized research area under the supervision of designated supervisors, within the expected time frame.

### **Selection criteria for Doctor of Philosophy (PhD):**

1. A Master's degree or a 4-year Bachelor's degree in Computer Science, Electrical Engineering or similar. A first class degree is required for either the Bachelor's or Master's (preferably both).
2. Good knowledge of mathematics and algorithms.
3. Good knowledge of using deep learning techniques for solving computer vision problems (e.g., detection, segmentation, and/ or classification).
4. Fluency in Python.
5. Good knowledge with: PyTorch, TensorFlow, OpenCV (or any alternatives).
6. English fluency, both written and spoken.
7. The scholarship is opened to both local (Malaysian) and international students
8. Meets the entry requirement of PhD at:
  - School of Engineering, Monash University Malaysia ([click here](#) for more details) or,
  - School of Information Technology, Monash University Malaysia ([click here](#) for more details).

Qualified candidates who are interested in applying for the scholarship should submit an academic CV with cover letter and academic transcripts for both their Bachelor's and/ or Master's degrees to Dr. Maxine Tan at [Maxine.Tan@monash.edu](mailto:Maxine.Tan@monash.edu). Only short-listed candidates will be notified.