



**Introduction to Tensorflow and Keras**  
**for**  
**Artificial Intelligence and Deep Learning**

Training Programme  
by  
Faculty of Engineering  
Multimedia University

## Overview

Tensorflow is a programming library developed by Google for implementation of algorithms related to artificial intelligence (AI). Keras is the high level application programming interface (API) that accesses the low level functions in Tensorflow library. This absolute beginner course provides a hands-on introduction to artificial intelligence and specifically focuses on deep learning techniques. The deep learning theory is supplemented by programming examples implemented with Keras. This is to enable students to appreciate the practical aspect of deep learning in real world application. In the guided project, students will build a working program to predict the presence of COVID-19 disease from the chest x-ray images. The project tasks include dataset preparation, data pre-processing, training the convolutional neural network and evaluating its performance.

## Objective

At the end of the session, participants will be able to:

1. Understand and apply the Keras application programming interface (API) to implement common neural network models.
2. Apply the standard pipeline for developing deep learning model
3. Design high performance deep convolutional neural network with transfer learning

## Target Audience

Anybody with some programming background in Python should be able to attend this course.

## Prerequisite

Basic Python programming knowledge.

## Training Methodology

Classroom short lecture, code demonstrations, hands-on exercises and mini project.

## Course Duration

2 days

## Content/Outline

### Day 1

#### **Session 1: Introduction to Artificial Intelligence and Deep Learning**

- Relationship between artificial intelligence, machine learning and deep learning
- Application of deep learning
- Types of machine learning and deep learning
- Google Colab

#### **Session 2: Tensorflow 2.0 and Keras**

- Tensorflow 2.0 (TF2)
- Keras API for TF2
- Operations on tensor

#### **Session 3: Artificial Neural Network (ANN)**

- Theory of ANN
- Data preparation
- Model development
- Training the model
- Model evaluation

### Day 2

#### **Session 4: Convolutional Neural Network (CNN)**

- Theory of CNN
- Data pre-processing
- Developing CNN model for image classification
- Parameter for model setup and training
- Training and evaluation of CNN model

#### **Session 5: Transfer Learning for CNN**

- Introduction to transfer learning
- Using pre-trained model
- Transfer learning technique
- Fine tuning CNN on custom dataset

#### **Mini Project**

Prediction of COVID-19 disease with chest x-ray images. The transfer learning and fine tuning method will be applied in this image classification problem.

## Course Instructors

### Mr. Haris Lye

Haris is an experienced lecturer with a strong interest in teaching and implementing cognitive computing systems. He is the technical leader in several high impact projects where he applies deep learning to solve many challenging problems that include face image retrieval, video, audio censorship and wearable camera computing. Haris has been lecturing at the Engineering faculty of Multimedia University Cyberjaya campus since 2005. He has obtained the Bachelor of Electronic and Electrical Engineering (Universiti Sains Malaysia) and a Master of Science in information technology from Multimedia University. His research mostly focuses on the practical application of deep learning in the computer vision and electronic engineering domain.

## Administrative Details

### Programme Logistics

Duration: 2 days

Dates, registration deadline and registration form:


Please refer to: <https://www.mmu.edu.my/foe/short-courses/>



### Your Investment

	Condition	Price per Pax
Regular Fee	Students / MMU Alumni	RM600
	Public	RM1000
	Public (Group >5 pax)	RM900
	IEM/IEEE Members	RM900
Early Bird Fee	Students / MMU Alumni	RM400
	Public	RM800
	Public (Group >5 pax)	N/A
	IEM/IEEE Members	RM700

### Method of Payment

Please refer to the next page.

Type of Payment	Method	Details
Local Transaction / Payment within Malaysia	Online Payment with JomPay	<ul style="list-style-type: none"> <li>To get started, login to any preferred internet banking.</li> <li>Look for JomPay to begin the payment process.</li> <li>Enter Ref 1 &amp; Ref 2.</li> </ul> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;">  <p><b>Billor Code :</b> 22202  <b>Ref-1 :</b> &lt;Participant IC/Passport&gt;  <b>Ref-2 :</b> Event Name*</p> </div> <p><b>JomPAY</b> online at Internet and Mobile Banking with your Current, Savings or Credit Card account</p> <p><i>*Ref. 2: FOETensorflow</i></p>
		<ul style="list-style-type: none"> <li>To get started, go to <b>MMU website</b> (<a href="https://www.mmu.edu.my/">https://www.mmu.edu.my/</a>) &gt; <b>Admission &gt; Financial Info &gt; Payment Channel &gt; Non Student</b> ;</li> </ul> <div style="border: 1px solid gray; padding: 5px; margin: 10px 0;"> <p><b>E-Payment</b>              To begin the payment process, please click Student or Non Students</p> <p>    </p> <p>Student   <b>Non-Student</b></p> </div> <p>or scan the QR code below to begin the process:</p> <div style="text-align: center; margin: 10px 0;">  </div> <ul style="list-style-type: none"> <li>Choose Category: <b>Public Training</b></li> <li>Workshop Name</li> <li>Choose Your Participant Type:             <ul style="list-style-type: none"> <li>✓ STUDEN (MMU, IEEE, IEM, Other Higher Learning Institution )</li> <li>✓ PUBLIC</li> <li>✓ GROUP ( Group &gt; 5 Pax )</li> <li>✓ IEEE/M (IEEE/IEM Members)</li> </ul> </li> </ul>

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**Note:**

Please submit the proof of payment to organizer for clearance updating purposes within 2 working days.

**Refund and Cancellation**

Any refunds will be processed in 60 days. Should there be any cancellation, it may be due to the organizer not getting the minimum participants or the participant failing to attend the workshop due to unavoidable reason.

**Disclaimer**

Faculty of Engineering, Multimedia University reserves the right to change the instructors, date and to vary/cancel the programme should unavoidable circumstances arise. All effort will be taken to inform participants of the changes. Upon submission of the registration form, you are deemed to have read and accepted the terms.

**Enquiries**

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