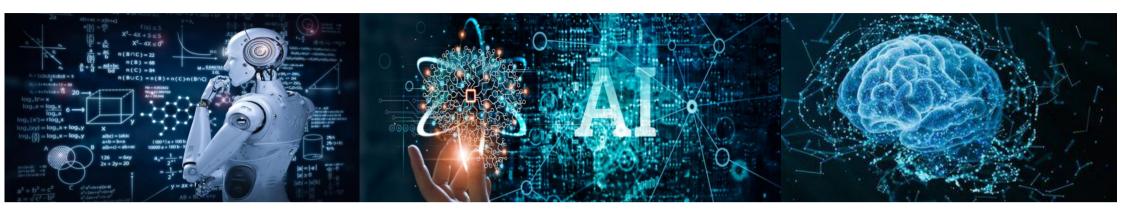
Practical Machine Learning & Deep Learning Course



<u>Who can learn the course?</u> The course is designed for everyone who interests in Machine Learning and Deep Learning (ML & DL) technologies as well as AI based applications <u>(Teaching in Vietnamese language).</u>

<u>What is the necessary background?</u> The necessary background is at least to finish the first year in a university with a basic Algebra Mathematics.

<u>What does the course provide?</u> The course aims to provide very basic concept of ML & DL technologies (e.g. Deep Neural Network, Transfer Learning, Inception, Model Decompression, Model Deployment, etc.) and how to apply these techniques into real-life applications (e.g. image classification, image captioning, audio detection, audio segmentation, text prediction, etc.).

<u>What will a learner gain from the course (Scope of the Course)?</u> Learners can obtain a big picture of applying ML & DL in Al domain. By doing practice from experiments provided by the course, Learners can adapt and work well on a wide range of Al based companies.

<u>How to register the course and check the fee?</u> Please kindly request the access to the Facebook group: https://www.facebook.com/groups/1854594508269628

What is the course content? Please kindly check the schedule below (2 hours per day, maximum 20 persons)

Day 1: Introduction

- 1. Tutor & Assistant Profiles
- 2. Introduction
- + Group of skills for ML/DL technology
- + Scope of the course
- 3. The Role of Research Papers in ML/DL
- 4. ML/DL jobs & LinkedIn

Day 2: Working Environment

- 1. Linux OS (Installation & Using)
- 2. Bash Shell & Vim
- 3. Anaconda
- 4. Jupiter Notebook
- 5. Google Colab
- 6. Working with remote servers

Day 3: Python Langue for ML/DL

- 1. Python basic
- 2. Function & Loop
- 3. OOP
- 4. Algebra
- 5. Data type
- 6. Search/Sort Algorithm
- 7. Numpy and Matrix
- 8. Plotting
- Read input data(csv/image/audio/video, etc.)
- 10. Others

Day 4: Linear & Gaussian Models

- 1. Linear Regression
- 2. Logistic Regression
- 3. Gaussian Model & Hypothesis Test

Day 5: K-mean & Decision Tree

- 1. K-mean
 - + K-mean explanation
 - + K-mean for Iris classification
- 2. Decision Tree (DT)
 - + DT explanation
 - + Apply DT for Iris classification

<u>Day 6:</u> Stroke Detection Using ML models

Stroke detection Kaggle Competition

<u>Day 7:</u> Multilayer Perceptron (MLP)

- 1. Forward & Backward in MLP
- 2. Apply MLP for Iris classification

<u>Day 8+9:</u> Convolutional Neural Network (CNN)

- 1. CNN explanation
- 2. Apply CNN for Iris Classification
- 3. Apply CNN for RS Image Classification (Transfer Learning, Attention)

- 4. Apply CNN for sound scene classification (Inception)
- 5. Apply CNN for Video Classification
- 6. Encoder-decoder (EC-DC) explanation
- 7. Apply EC-DC for image denoise

<u>Day 10+11+12:</u> Recurrent Neural Network (RNN)

- 1. LSTM & GRU explanation
- 2. Apply RNN for Iris classification
- 3. Apply RNN for predicting text
- 4. Apply CNN-RNN for audio detection
- 5. Transformer explanation
- 6. Apply transformer for Image Captioning

<u>Day 13+14+15:</u> Deploy ML & DL

- 1. Deploy ML & DL technology
 - + Frontend develop (Streamlit, HTML)
 - + Backend develop (flash)
 - + API
 - + Docker
 - + Python library
- 2. Low complexity DL model
 - + Deconvolution
 - + Teacher Student Scheme
 - + Pruning technique
 - + Quantization technique

Day 16: Summary