Practical Machine Learning & Deep Learning Course

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

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

What does the course provide? 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.).

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

How to register the course and check the fee? 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
9. 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

Day 6: Stroke Detection Using ML models

Stroke detection Kaggle Competition

Day 7: Multilayer Perceptron (MLP)

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

Day 8+9: 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

Day 10+11+12: 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

Day 13+14+15: 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