**TEACHING DIARY**

Active Learning Project

*(4th September 2019 - 16th October 2019)*

**Class:** Deep Learning 2 **Number of students:**  **Number of lessons:** 24

**Teacher:** Le Chi Ngoc

**Place of study:** C2 Conference room, 7th floor, Ta Quang Buu library

Outline: 12 lectures.

Assessment: 3 courseworks (15% for each) + 1 midterm (25%) + final project ( 30%).

The deadline for each coursework is one week.

The grade to pass the course and get a certificate: 70%.

| **DATE** | **TIME** | **TEACHING CONTENT** | **COURSEWORK** | **TEACHER’S NAME** | **TEACHER’S SIGNATURE** |
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| 4 Sep 2019 | 5:30pm – 7:00pm | Course introduction: content, coursework, project. (Introduction to Machine Learning and Deep Learning) |  |  |  |
| 7:15pm - 8:45pm | Introduction to Python. |  |  |  |
| 6 Sep 2019 | 5:30pm – 8:45pm | Project defense lớp trước |  |  |  |
|  |  |  |
| 11 Sep 2019 | 5:30pm – 7:00pm | Review on Mathematics (Linear algebra: vector, matrix, matrix manipulation, tensor. Calculus: gradient, chain rule, gradient descent. Probability: discrete, continuous variable, mean, variance, normal distribution) |  |  |  |
| 7:15pm - 8:45pm | Introduction to Python (p2) |  |  |  |
| 13 Sep 2019 | 5:30pm – 7:00pm | Linear regression + Logistic regression |  |  |  |
| 7:15pm - 8:45pm | Implement linear regression + logistic regression from scratch |  |  |  |
| 18 Sep 2019 | 5:30pm – 7:00pm | Neural network + Backpropagation |  |  |  |
| 7:15pm - 8:45pm | Implement a neural network with 1 or 2 hidden layer -> predict MNIST (vector 784\*1) |  |  |  |
| 20 Sep 2019 | 5:30pm – 7:00pm | Convolutional Neural Network (CNN): convolutional layer, pooling layer. ImageNet challenge. AlexNet, VGGNet architecture | Cw1: Image classification (flexible topics) |  |  |
| 7:15pm - 8:45pm | Image classification (MNIST/CIFAR) |  |  |  |
| 25 Sep 2019 | 5:30pm – 7:00pm | Deep Learning Tips |  |  |  |
| 7:15pm - 8:45pm | Một số kiến trúc CNN |  | Nguyen The Hung |  |
| 27 Sep 2019 | 5:30pm – 7:00pm | Unsupervised learning, PCA, traditional autoencoder, deep autoencoder, CNN autoencoder. Example: Text retrieval, similar image search, denoising. | Cw2: autoencoder application (flexible topics) |  |  |
| 7:15pm - 8:45pm | **Exam (30 mins) +**  Basic Autoencoders and Variational Autoencoder | Exam (30 mins), similar to <https://github.com/chizhang529/cs231n/blob/master/SampleMidterm/CS231NSampleMidterm.pdf> |  |  |
| 02 Oct 2019 | 5:30pm – 7:00pm | Recurrent Neural Network (RNN), Bi-direction RNNs, Stacked RNN, Pyramid RNN. Example: sentiment classification, image captioning. |  |  |  |
| 7:15pm - 8:45pm | RNN, LSTM, GRU with Keras |  | Nguyen The Hung |  |
| 04 Oct 2019 | 5:30pm – 7:00pm | GAN | Cw3: RNN application (flexible topic) |  |  |
| 7:15pm - 8:45pm | MNIST, CIFAR10 generation |  |  |  |
| 09 Oct 2019 | 5:30pm – 7:00pm | Guess Talk |  |  |  |
| 7:15pm - 8:45pm |  | **Nguyen The Hung** |  |
| 11 Oct 2019 | 5:30pm – 7:00pm | Project defense |  |  |  |
| 7:15pm - 8:45pm |  |  |  |  |

| **Confirmed by Center for Science and Technology Development** | **Confirmed by Vietnam Institute for Advanced Study in Mathematics** |
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