**EECE695V: Introduction to AI for postgraduate students**

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| Syllabus |

Lectures will be given to cover a brief introduction to the mathematical background needed for studying machine learning. The main aim is to understand the principle of deep learning and get familiar with deep learning programming. Students will be required to use Python and Pytorch.

**1. Instructor**

* Hyun Jong Yang, LG bldg.. #417, Email: [hyunyang@postech.ac.kr](mailto:hyunyang@postech.ac.kr)
* Office Hours: Available upon request (email me!).

**2. Teaching Assistant**

* Hosung Joo ([zxcqa123@postech.ac.kr](mailto:zxcqa123@postech.ac.kr))
* Yein Heo ([yeinheo@postech.ac.kr](mailto:yeinheo@postech.ac.kr))
* Heonho Noh ([hyeonho@postech.ac.kr](mailto:hyeonho@postech.ac.kr))
* Hyeonsu Lyu ([hslyu4@postech.ac.kr](mailto:hslyu4@postech.ac.kr))

**3. Textbooks/Lecture Materials**

* Textbook: Ian Goodfellow and Yoshua Bengio and Aaron Courville, *Deep Learning*, MIT Press, 2016.
  + Free pdf download: [Deep Learning (deeplearningbook.org)](https://www.deeplearningbook.org/)

**4. Grading**

* Project #1: 50%
* Project #2: 50%

**5. Misc**

* *Most likely*, each weekly lecture video will be uploaded to PLMS before the week starts.

**Weekly plan**

Week 1 (09/06, 09/08): Machine learning overview, Brief tutorial on Python

Week 2 (09/13, 09/15): Linear algebra, Probability & Information theory

Week 3 (09/20, 09/22): National holidays (Korean thanks giving day)

Week 4 (09/27, 09/29): Numerical computation,

Week 5 (10/04, 10/06): Machine learning overview

Week 6 (10/11, 10/13): Brief tutorial on Pytorch

Week 7 (10/18, 10/20): Deep forward networks

* Project #1 will be assigned
* SVM, Custom Fully connected neural network
* Custom dataset + Kaggle dataset
* Report + 5-min videos.

Week 8 (10/25, 10/27): No class (midterm exam period)

Week 9 (11/01, 11/03): Regularization for deep learning

Week 10 (11/08, 11/10): Optimization for training deep models

Week 11 (11/15, 11/17): Convolutional networks

* Deadline for project #1: 11/17

Week 12 (11/22, 11/24): Recurrent and recursive networks

* Project #2 will be assigned
* Custom CNN and RNN
* Custom dataset + Kaggle dataset
* Report + 5-min videos.

Week 13 (11/29, 12/01): Practical methodology

Week 14 (12/06, 12/08): Applications

Week 15 (12/13, 12/15): TBA

Week 16 (12/20, 12/22): No class (final exam period)

* Deadline for project #2: 12/20