Introduction to Deep Learning **2025 Spring CSIE Grad. Course No. 4105016**
Thursday B,C (8:45~11:30) **Professor Pao-Ann Hsiung**

Week	Date	Topics	Lectures (# slides)	Lab	Homework
1	2/20	Introduction	Introduction to machine/deep learning, applications, history of ML, Python (65)		
2	2/27			1. Python	
3	3/06	Neural Networks	Basics, Shallow Neural Networks, Deep Neural Networks (86)		1.Tensorflow
4	3/13			2. DNN	
5	3/20	Tuning Neural Networks	Regularization, Dropout, Optimization, Gradient Checking, Tensorflow, Open Source (29/72)		2. Keras
6	3/27			3.Regularization+Dropout	
7	4/03		Momentum, RMSprop, Adam, Learning rate decay, Hyperparameter tuning, Batch Normalization, Softmax (43/72)		
8	4/10				3.Adam+RMSprop+Momentum
9	4/17	**Mid Term Exam (with take home programming exam)**			
10	4/24	Error Analysis & Transfer Learning	Error Analysis, Transfer Learning, Multi-task Learning (32)		
11	5/01	Convolutional Neural Networks	Introduction, Classic Networks, Object Detection, YOLO Algorithm, Face Recognition, Neural Style Transfer (82)	4. Building CNN	4. Resnet
12	5/08			5. Car Detection (YOLO)	5. Face Recognition
13	5/15	Recurrent Neural Networks	RNN, Language Model & Sequence Generation, GRU, LSTM, Bidir/Deep RNN (33)		6. Building RNN
14	5/22	Deep Generative Models	Autoencoders, Generative Autoencoders (52)		
15	5/29				7. Building GAN
16	6/05	Paper Presentations			
17	6/12	Team Project Demo & Presentation			
18	6/19	**Final Exam**			

Project Proposal Deadline: 3/6. Term Project & Paper Presentations: In groups of 5~ persons. Red dates are holidays.