Introduction to Deep Learning **2019 Spring CSIE Grad. Course No. 4105016**
Tues B, Thurs B (8:45~10:00) **Professor Pao-Ann Hsiung**

Week	Date	Topics	Lectures (# slides)	Lab	Homework
1	2/19, 2/21	Introduction	Introduction to machine/deep learning, applications, history of ML, Python (65)		
2	2/26, 2/28			1. Python	
3	3/5, 3/7	Neural Networks	Basics, Shallow Neural Networks, Deep Neural Networks (86)		1.Tensorflow
4	3/12, 3/14			2. DNN	
5	3/19, 3/21	Tuning Neural Networks	Regularization, Dropout, Optimization, Gradient Checking, Tensorflow (29/72)		
6	3/26, 3/28			3.Regularization+Dropout	
7	4/2, 4/4		Momemtum, RMSprop, Adam, Learning rate decay, Hyperparameter tuning, Batch Normalization, Softmax (43/72)		
8	4/9, 4/11				2.Adam+RMSprop+Momentum
9	4/16, 4/18	**Mid Term Exam (with take home programming exam)**			
10	4/23, 4/25	Error Analysis & Transfer Learning	Error Analysis, Transfer Learning, Multi-task Learning (32)		3. Keras
11	4/30, 5/2	Convolutional Neural Networks	Introduction, Classic Networks, Object Detection, YOLO Algorithm, Face Recognition, Neural Style Transfer (82)	4. Building CNN	4. Resnet
12	5/7, 5/9			5. Car Detection (YOLO)	5. Face Recog. or Neural Style Transfer
13	5/14, 5/16	Recurrent Neural Networks	RNN, Language Model & Sequence Generation, GRU, LSTM, Bidir/Deep RNN (33)	6. Building RNN	6. Jazz music
14	5/21, 5/23	Deep Generative Models	Autoencoders		
15	5/28, 5/30		Generative Autoencoders	7. Building GAN	
16	6/4, 6/6	Team Project	Project Demo & Presentation		
17	6/11, 6/13				
18	6/18, 6/20	**Final Exam (with Programming)**			

Paper Presentations: In groups of 2~3 persons, 1 paper presentation per week starting from 4/25. Red dates are holidays.