Applied Deep Learning
Machine Learning and Having It Deep and Structured

National Taiwan University, 2017 Fall Semester

Instructor Information

Instructor

Yun-Nung (Vivian) Chen 陳縕儂
Hung-Yi Lee 李宏毅

Email

yvchen@csie.ntu.edu.tw
hungyilee@ntu.edu.tw

Lecture Location & Hours

Monday 14:20-17:20
Thursday 09:10-12:10

General Information

Description

Learning the basic theory of deep learning and how to apply to various applications

Expectations and Goals

The students are expected to understand

1) how deep learning works
2) how to frame tasks into deep learning problems
3) how to use deep learning toolkits to implement the designed models, and
4) when and why specific deep learning techniques work for specific problems.

Assignments & Project

4 assignments, 1 group final project, 1 write-up report

Pre-requisites

Required Coding Skills

• Proficiency in Python; All assignments will in Python.

Required Courses

• College Calculus
• Linear Algebra
• Probability
• Machine Learning (preferred but optional)
• Statistics (preferred but optional)

Course Schedule

Week	Date	Topic	Assignment
1	09/11/2017 09/14/2017	Introduction	09/16/2017 Basics
2	09/18/2017 09/21/2017	Neural Networks	
3	09/25/2017 09/28/2017	Backpropagtion + Sequence Modeling	
4	10/02/2017 10/05/2017	Recurrent Neural Network	10/07/2017 Sentence Completion Release
	10/09/2017	***Break***	
5-1	10/12/2017	***Company Workshop (Microsoft)***	
5-2	10/16/2017	Word Embeddings + ***Guest Lecture (HTC)***	
6-1	10/19/2017	***Guest Lecture (HTC)***	
6-2	10/23/2017	Word Embeddings + ***Guest Lecture (Su)***	
7	10/26/2017	Word Embeddings	10/28/2017 Sentence Completion Due 10/28/2017 Image Captioning Release
8	10/30/2017 11/02/2017	Gating Mechanism + Attention & Memory	
9	11/06/2017 11/19/2017	Convolutional Neural Networks	
10	11/13/2017	***Company Workshop (Microsoft)***	
11	11/16/2017 11/20/2017	NN Practical Tips	11/19/2017 Image Captioning Due 11/19/2017 Game Playing Release
12	11/23/2017 11/27/2017	Deep Reinforcement Learning	
13	11/30/2017	***Guest Lecture (Dr. Gao)***	
14	12/04/2017 12/07/2017	Deep Reinforcement Learning	
15	12/11/2017 12/14/2017	Unsupervised Learning	12/16/2017 Game Playing Due 12/16/2017 Comics Generation Release
	12/18/2017	***Break***	
16	12/21/2017 12/25/2017	Generative Adversarial Network	
17	12/28/2017 01/08/2018	Generative Adversarial Network	01/13/2018 Comics Generation
	01/01/2018 01/04/2018	***Break***	

Week	Date	Topic	Assignment
18	01/11/2018 01/15/2018	***Final Project Presentation***	01/20/2018 Final Project Due

Assignment Schedule

Release Date	Due Date	Subject	Time
10/07/2017	**10/28/2016**	Sentence Completion	3 weeks
10/28/2016	**11/19/2016**	Image Captioning	3 weeks
11/19/2016	**12/06/2016**	Game Playing	4 weeks
12/16/2016	**01/13/2018**	Comics Generation	4 weeks