

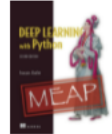


112-1 Course Requirements of Building Deep Learning Applications

Prof. Kuan-Ting Lai
2023/10/12

Web (www.aiotlab.org/teaching/dl_app.html)

BUILDING DEEP LEARNING APPLICATIONS

 NTUT Deep Learning FB Group  Playlist

Week	Topic	Learning Objectives	Slides	Code	Video
	Text Book	François Chollet, Deep Learning with Python, 2nd Edition, Manning, 2021		GitHub	
0	Past, Present, and Future of AI	<ul style="list-style-type: none">Free your imagination to unleash your potential!			
1	Introduction to Deep Learning	<ul style="list-style-type: none">What is the Machine Learning?Neural Networks, Gradient Descent and BackpropagationState-of-the-arts of deep learning	pdf		
2	Applied Math	<ul style="list-style-type: none">Linear AlgebraProbabilityCalculusOptimization	pdf		
3	Introduction to Keras	<ul style="list-style-type: none">Write Keras code on Google ColabCreate a simple Dense Neural NetworksUse DNN to solve classification and regression problemsBatch, Epoch and Learning rate	pdf	IMDB_review financial_news house_pricing	

YouTube Playlist

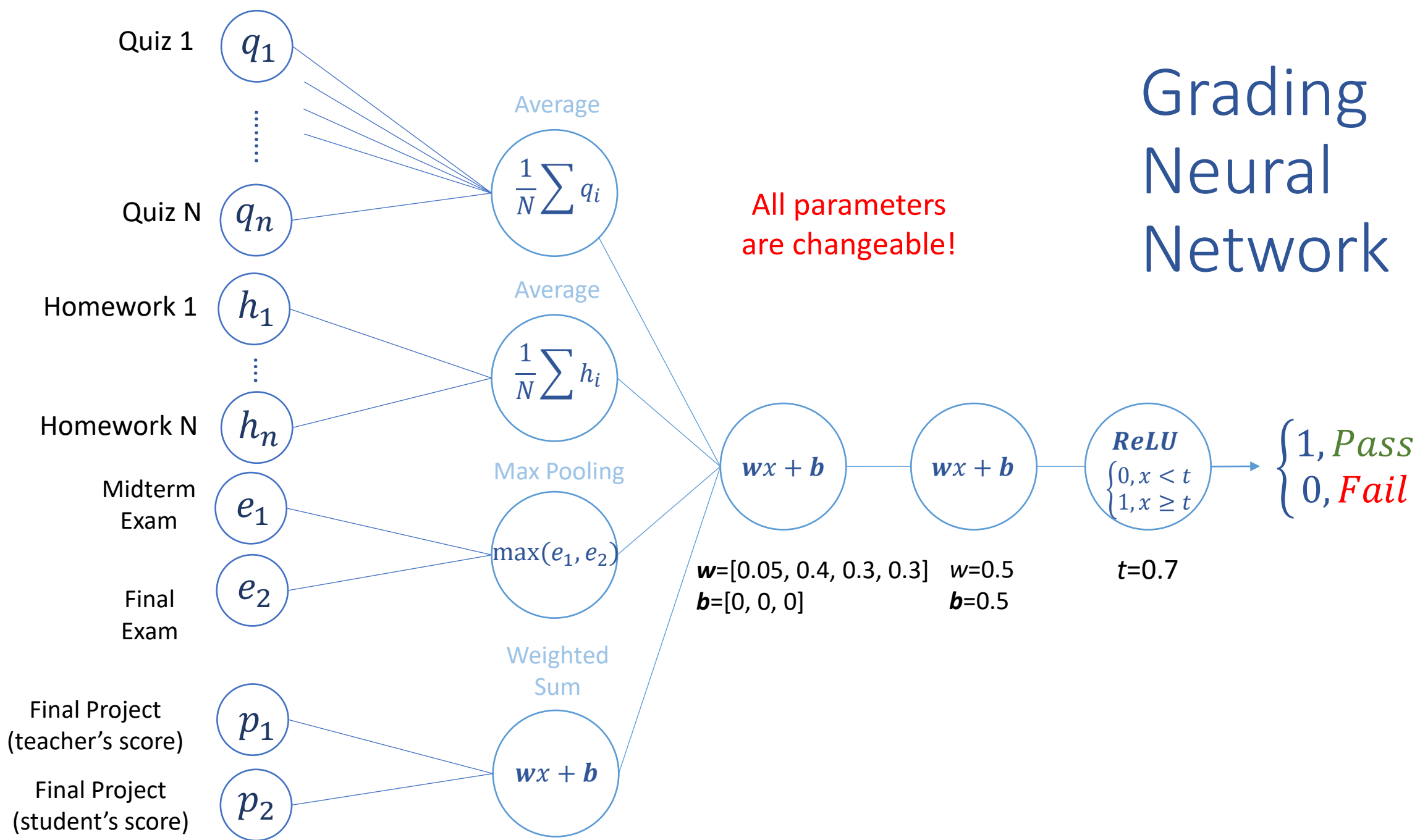
- <https://www.youtube.com/playlist?list=PL3S3ZnDPwJ-OK-Kz1F1zYf2ZZhXckXDoL>

The screenshot shows a YouTube browser interface. At the top, the address bar displays the playlist URL. Below it, the YouTube logo and a search bar are visible. The left sidebar contains navigation icons for Home, Explore, Subscriptions, and Library. The main content area features a playlist card for 'Taipei Tech Deep Learning' by Kuan-Ting Lai, showing a video thumbnail with the text 'AI & Future' and 'Prof. Kuan-Ting Lai 2021/9/22'. Below the card, the playlist title 'Taipei Tech Deep Learning' is displayed along with statistics: '5 videos • 36 views • Updated today'. The playlist is set to 'Public'. A list of five videos is shown on the right, each with a thumbnail, title, duration, and the creator's name 'Kuan-Ting Lai'. The videos are: 'AI & Future' (58:59), 'Introduction to Keras' (1:18:27), 'Machine Learning Basics' (2:30:44), 'Convolutional Neural Networks' (1:45:12), and 'Introduction to Deep Reinforcement Learning' (54:34).

Course Requirements (under rolling correction)

- Kaggle-style homework (45%)
 - Extended MNIST
 - Taiwanese Food 101
 - Data Preprocessing
 - Traffic Object Detection
 - Playing Tetris
- Exam (20%)
 - Midterm (25%)
- Final Project (20%)
 - Team members (1 ~ 4)
 - YouTube demo video
- Quizzes (10%)
- Attendance & Bonus (5%)

Grading Neural Network

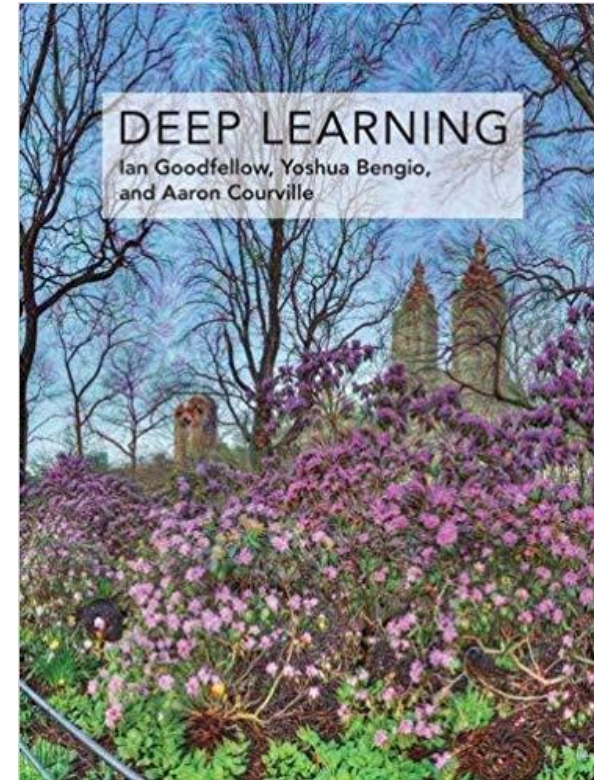
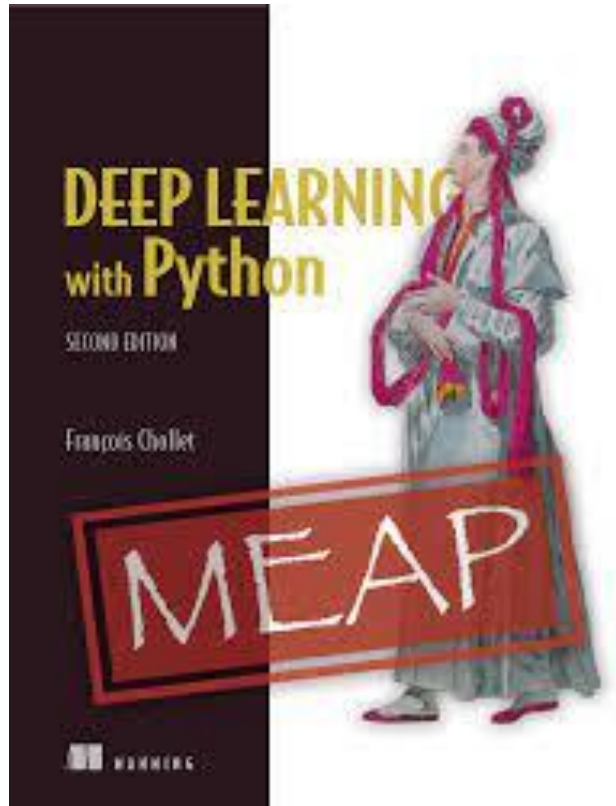


Grading Policy of Homework

Kaggle Ranking	Grade Description	Grade
Top 5%	Excellent	A+
5% ~ 20%		A
20 ~ 50%		A-
Others		B+
< Random Guess	Very Good	C
No submission		F

Textbooks & References

- Francois Chollet, “Deep Learning with Python, 2nd Edition” Manning, 2021
- Ian Goodfellow, Yoshua Bengio, and Aaron Courville, “Deep Learning,” MIT Press, 2017
- Latest publications on Nature, CVPR, NIPS, ICML, AAAI, ICLR



Schedule

Date	Syllabus
9/12	Past, Present, and Future of AI
9/19	Introduction to Deep Learning TensorFlow & Keras
HW1	Extended MNIST (Due 10/10)
9/26	Applied Math Machine Learning Basics
10/3	Convolutional Neural Networks (CNN) (Francois (2017), Chapter 5)
HW2	Taiwanese Food 101 (Due 10/24)
10/10	Holiday
10/17	Calculus & Optimization
10/24	Object Detection
10/31	Network Pruning and Quantization
10/7	Midterm

Schedule (cont.)

Date	
11/14	Natural Language Processing (NLP) and word Embedding
HW3	TBD (Due 5/9)
11/21	RNN & LSTM
11/28	Attention & Transformer
HW4	Deep Action Recognition (Due 12/6)
12/5	Generative Adversarial Networks (Francois (2017), Chapter 8)
12/12	Deep Reinforcement Learning (DRL)
12/19	Deep Learning on Graphs
12/26	Final Project Demo (YouTube Video, 10mins)
1/2	Final Project Demo (YouTube Video, 10mins)

IF YOU DON'T STUDY

YOU SHALL NOT PASS

岩石壁

Facebook Group (NTUT Deep Learning)

