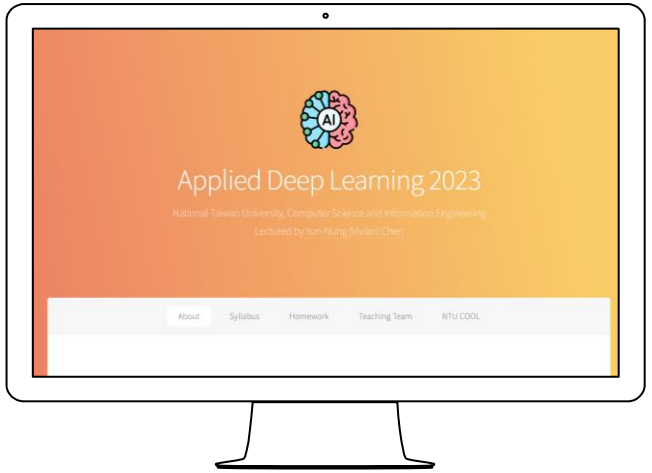
Applied Deep Learning

Course Logistics

September 4th, 2024 http://adl.miulab.tw

National Taiwan University 國立臺灣大學

Course Logistics



- Instructor: 陳縕儂 Yun-Nung (Vivian) Chen
- Head TA: 林彥廷 Yen-Ting Lin
- Time: Wednesday 234, 9:10-12:10
- Location
  - Virtual: YouTube & COOL
  - Physical: R104
- Website: http://adl.miulab.tw
- NTU COOL: https://cool.ntu.edu.tw/courses/41797
- Slido: #ADL2024
- Email: adl-ta@csie.ntu.edu.tw
  - To ensure timely response, email title should contain “[ADL2024]”
  - Do NOT send to our personal emails

Always check the up-to-date information from COOL

NTU COOL for Digital Learning

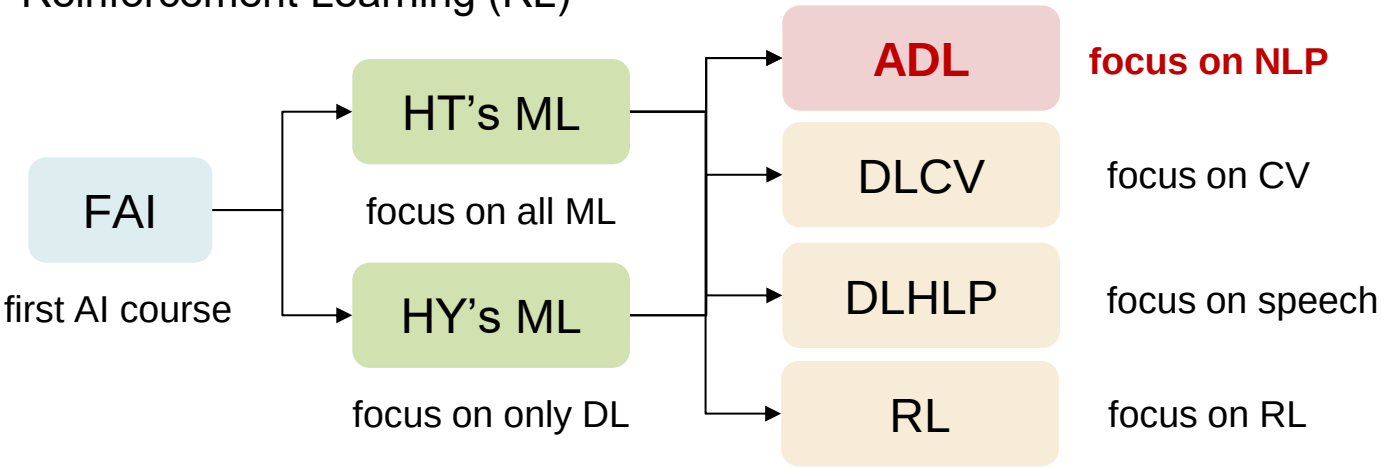
- NTU COOL
  - Lecture videos
    - Comments anytime
  - Assignment submission
- Slido QA
  - #ADL2024
- TA Team
  - Forum discussion (preferred)
  - Email QA
  - TA recitation/hours (maybe virtual)

Course Goal

- The students are expected to understand
  1. how deep learning works
  2. how to frame tasks into learning problems
  3. how to use toolkits to implement designed models
  4. how to utilize pre-trained models, and
  5. when and why specific learning techniques work for specific problems

Related Courses

- 陳尚澤+陳縕儂, “Fundamental of Artificial Intelligence (FAI)”
- 李宏毅, “Machine Learning (ML)”
- 林軒田, “Machine Learning (ML)”
- 王鈺強, “Deep Learning for Computer Vision (DLCV)”
- 李宏毅, “Deep Learning for Human Language Processing (DLHLP)”
- 孫紹華, “Reinforcement Learning (RL)”



Deep Learning for NLP

Covered topics by lecturers

- DL Basics
- Language Representations
- Language Modeling
- Transformer
- Classic Training + Inference
- Pre-training + Fine-Tuning
- Pre-training + Prompting
- Issues in NLP

Head TA recitation

- Dev Infra & Tooling (Colab, GPU, PyTorch)
- DL Workflow
- Huggingface Basics
- LLM Architecture
- LLM Evaluation
- LLM Training
- LLM Inference

Pre-requisites

- Course
  - Required: college-level calculus, linear algebra
  - Preferred: probability, statistics
- Programming
  - proficiency in Python; all assignments will be in Python
  - GitHub; all assignments will be handed in via GitHub

python

(tutorial from Stanford)

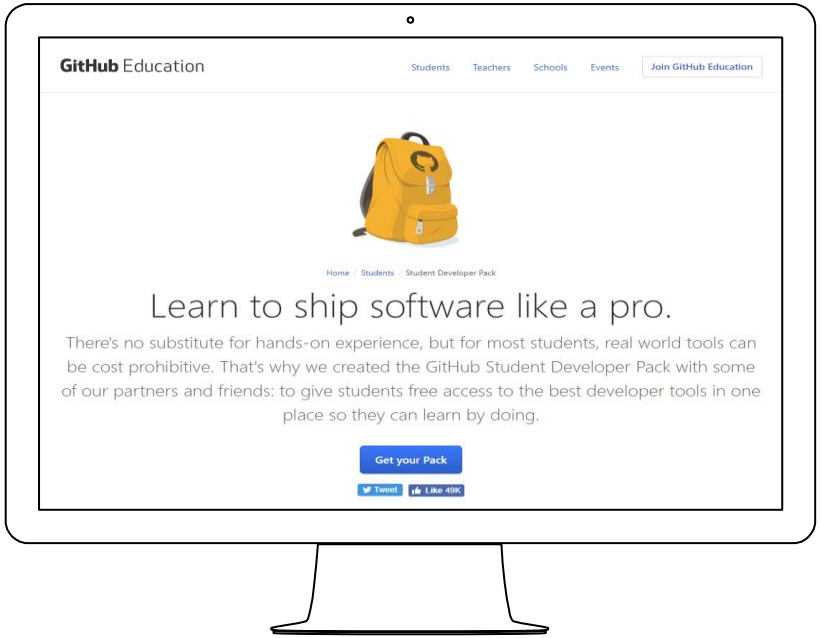
GitHub

(tutorial)

Please consider your available resources for taking this course

GitHub Student Pack

- The student plan provides unlimited private repositories
  - make your assignments private before the due date
  - make them public afterwards



Grading Policy

- 3 Individual Assignment: 60%
  - GitHub code w/ README
    - The score is based on coding and the report
    - Bonus points for outstanding performance
    - **Late policy: 25% off per day late afterwards**
- Final Group Project: 35%
  - GitHub code, Project document
  - Final presentation (format TBA)
- Participation: 5%
  - Write-up for the special events

Understanding the difference between “collaboration” and “academic infraction”
Adding suitable references / citations (including LLMs) in your reports

Collaboration vs. Academic Infraction

- CAN
  - ask LLMs (ChatGPT, Gemini, etc) and *add references*
  - use code from public repos and *add references*
  - discuss with peer and *add references*
- CANNOT
  - check **code** or **report** from prior or current students
  - use external materials but *no references*

2022 ADL Fall

台大資訊 深度學習之應用 | ADL Assignment Plagiarism Announceme...

Individual Assignments

A1. Transformer / BERT

A2. Language Generation

A3. LLM Tuning

Final Group Project (3~5 persons)

- Topic TBA (with the techniques taught in this course)
  - Presentation
    - Poster or oral presentation
  - Peer grading
  - Project Report & Code
    - Wrap-up project report
    - GitHub code submission w/ README

Tentative Schedule

Virtual | Physical | No Course

Week	Topic	TA Recitation	Assignment
1 2024/09/02	Course Logistics, A0	Colab, GPU, PyTorch	A0 – Basics
	Introduction, NN Basics, Backpropagation		
2 2023/09/11	Word Representations, Language Modeling, Sequence Modeling, Attention	DL Workflow	A1 – BERT
3 2023/09/18	Transformer, Tokenization, BERT	HuggingFace Tutorial	
4 2023/09/25	NLG Decoding, NLG Evaluation		A2 – NLG
5 2023/10/02	Prompt-Based Learning	LLM Architecture	
6 2023/10/09	LLM Adaptation		A3 – LLM Tuning
7 2024/10/16	QA Session & TA Workshop	LLM Eval	
8 2023/10/23	Midterm Break		
9 2023/10/30	Conversational AI	LLM Training	
10 2023/11/06	Guest Lecture – DRL		
11 2023/11/13	Break		
12 2023/11/20	Retrieval-Augmented Generation	LLM Inference	
13 2023/11/27	Beyond Supervised Learning		
14 2023/12/04	Issues in Pre-trained Models		
15 2023/12/11	Recent Trends		
16 2023/12/18	Final Project Presentation		

Teaching Assistant Team

Rules

Asking questions is encouraged!!

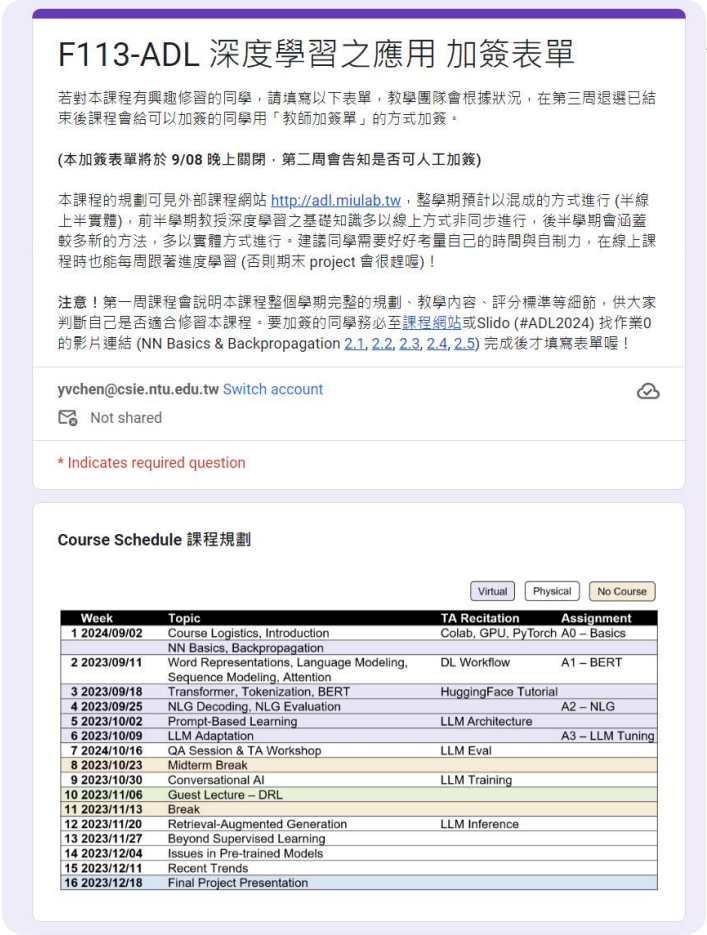
Any comment or feedback is preferred!! (speed, style, etc)

Attending TA hours!! (details TBA)

Course Registration

ADL-F113

1. Fill in the form by **Sep 8th (Sun)**
2. Be notified if you can register the course before **Sep 15th (Sun)**
3. Drop the course (or other courses) in the system before **Sep 16th (Mon) 8am**
4. Register this course in the week of **Sep 16th – 24th** via 人工加簽單



F113-ADL 深度學習之應用 加簽表單

若對本課程有興趣修習的同學，請填寫以下表單，教學團隊會根據狀況，在第三周退選已結束後課程會給可以加簽的同學用「教師加簽單」的方式加簽。

(本加簽表單將於 9/08 晚上關閉，第二周會告知是否可人工加簽)

本課程的規劃可見外部課程網站 http://adl.miulab.tw，整學期預計以混成的方式進行 (半線上半實體)，前半學期教授深度學習之基礎知識多以線上方式非同步進行，後半學期會涵蓋較多新的方法，多以實體方式進行。建議同學需要好好考量自己的時間與自制力，在線上課程時也能每周跟著進度學習 (否則期末 project 會很趕喔)！

注意！第一周課程會說明本課程整個學期完整的規劃、教學內容、評分標準等細節，供大家判斷自己是否適合修習本課程。要加簽的同學務必至課程網站或Slido (#ADL2024) 找作業0的影片連結 (NN Basics & Backpropagation 2.1, 2.2, 2.3, 2.4, 2.5) 完成後才填寫表單喔！

yvchen@csie.ntu.edu.tw Switch account

Not shared

* Indicates required question

Course Schedule 課程規劃

Virtual | Physical | No Course

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Important! Homework 0

- You MUST finish HW0 in order to enroll in this course
- Online lectures
  - NN Basics [2.1] [2.2] [2.3] [2.4]

  - Backpropagation [2.5]

Thanks!

Any questions ?

You can find the course information at

- http://adl.miulab.tw
- adl-ta@csie.ntu.edu.tw
- slido: #ADL2024
- YouTube: Vivian NTU MiuLab