

Course Introduction

Applications of Machine Learning in Education by
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Course Description

This introductory course covers fundamental concepts, techniques, and algorithms in machine learning, beginning with overviews on topics such as linear regression, classification, unsupervised learning and ending up with more recent topics such as deep neural networks. The course will guide students to understand the basic ideas and insights behind the design of advanced machine learning algorithms as well as some rationale of why a model works and how to use a model properly.

Learning Objectives

- Understand what a machine can learn from data and basic learning strategies.
- Be able to formulate machine learning problems corresponding to the application contexts.
- Understand a variety of machine learning algorithms and their pros and cons.
- Have a basic theoretical knowledge of machine learning approaches.
- Be able to apply machine learning algorithms to solve problems.

Schedule

Date	Topic	
9/10/2019	Course introduction; What is machine learning	
9/17/2019	Supervised learning; Unsupervised learning	Quiz 1
9/24/2019	Regression	Homework 1
10/1/2019	Classification	Quiz 2
10/8/2019	Clustering	Homework 2
10/15/2019	Dimensionality reduction	Quiz 3
10/22/2019	Neural networks	Homework 3
10/29/2019	Introduction to deep learning	Quiz 4

Schedule

Date	Topic	
11/5/2019	Project: defining a problem	
11/12/2019	Project: data preparation	
11/19/2019	Project: model training and evaluation	
11/26/2019	Project: result visualization	
12/3/2019	Project: statistical analysis	
12/10/2019	Project: model optimization	
12/17/2019	Project: result interpretation	
12/24/2019	Final presentation	

Grading

- Quiz (10%)
- Homework (30%)
- Final project (50%)
- Participation and discussion (10%)

Contact Information

- 辦公室: 人社一館 HA323
- Email: cwei@nctu.edu.tw
- Office hour: by appointment
- Teaching assistants:
 - 蔡旻均 dollars9256741@gmail.com
 - 劉昱劭 ysl@cs.nctu.edu.tw
 - 吳凱文 waskevin0512@gmail.com
- TA session: 2H

Before We Start

- Lecture format
 - (X) Three sections – 13:20-14:10, 14:20-15:10, 15:30-16:20
 - (O) Two sections – 13:20-14:35, 14:45-16:00
- GitHub account
- Pre-course questionnaire
- GitHub repository:
https://github.com/dollars9256741/5864_MLinEDU