Course Description

Introduction to Artificial Intelligence with Mathematics

Ganguk Hwang

Department of Mathematical Sciences
KAIST

Course Information

- Class: TUE, THU 10:30 am $\sim$ 11:45 am
  (Non-realtime Classes for fall 2021)
- Instructor: Ganguk Hwang (office: E2-1 room 3212, ext. 2714)
  email: guhwang@kaist.edu
- TAs: Sejun Park and Kihun Hong
- Class Website: http://klms.kaist.ac.kr/

- No textbook is required for this course. Lecture notes will be posted periodically on http://klms.kaist.ac.kr/
- Prerequisites: Basic knowledge of probability, statistics, linear algebra, and calculus, Experience on programming in Python
- Office hours & discussions: TUE 13:30 $\sim$ 14:30 or by appointment
- Grading: No Midterm exam, Final exam + Term project 60%, Homeworks 40%

Outline

Week	Topics
1	Introduction to Artificial Intelligence
2	Probability and Statistics for AI
3	Linear Algebra for AI
4	Introduction to Programming for AI
5	Supervised Learning: Linear Regression
6	Supervised Learning: Classification
7	Supervised Learning: Logistic Regression and SVM
8	Midterm exam period (No midterm exam)

Week	Topics
9	Unsupervised Learning: Clustering
10	Unsupervised Learning: GMM and EM
11	PCA and Markov Chain Monte Carlo Method
12	Reinforcement Learning I
13	Reinforcement Learning II
14	Deep Learning: Neural Network and Backpropagation
15	Deep Learning: CNN
16	Final exam

The course schedule is tentative and subject to change depending on the progress of the class.