Course Description

Machine learning studies "how can we build computer programs that automatically improve their performance through experience?" This course introduces fundamentals of machine learning; it covers methods, theory and algorithms needed to do research in (and applications of) machine learning. Subjects are taken from machine learning, classic statistics, data mining and information theory. Topics include, but not limited to, regression, density estimation, classification, kernel methods, ensemble methods, dimensionality reduction, clustering, online learning and learning theory.

Prerequisite

COSC3020 or approval of the instructor. Working knowledge on linear algebra, probability and optimization are needed to fully understand the lectures and complete theory assignments. Sufficient programming skills in Python will be needed to complete programming assignments.

Grading Policy

- 4550: Assignment 50%, Midterm1 15%, Midterm2 15%, Final 20%
- 5550: Assignment 70%, Midterm1 10%, Midterm2 10%, Final 10%

Reference


Assignment Policy

- Students can collaborate in completing assignments. However, participants should clarify any major components that are worked out with others, and be ready to independently defend their solutions.
- Students can take reference from online materials when completing assignments. However, practitioners should clarify these reference and be ready to defend their solutions.
- Late submissions will not be graded unless they are approved by the instructor before their deadlines.

Attendance and Auditing

Attendance is not mandatory. Anyone is welcome to audit any lectures. However, auditors cannot take exams or quizzes and their submitted works will not be graded or commented.