Course Syllabus

1. Basic Course Information

Course Name	Machine Learning		Course code		ITP40010
Year	2023		Semester		2
Department	School of Computer Science and Electrical Engineeering		Categories		major elective
Grade	4		Section		1
Major	Information Technology, Computer Science, Computer Engineering, Electrical Engineering				
Course Credit	Total	Lecture	Experiment/Practice	Design	etc()
	3	3	0	0	0

Method of Course	Lecture			
Prerequisite Courses	Compulsory	Calculus2, Linear Algebra	Parallel Courses	
	Recommended	Data Structure, Probability and Statistics		
Supervising Professor	Heeyoul Choi		Email	
Lecturer Name	Lecturer Email	Lecturer Contact Number	Office	Office Hour
Heeyoul Choi		054-260-1303	OH 312	
TA Name	TBD		TA email	TBD
Classroom Location	TBD		Lecture Hours	TBD

2. Course Objectives

● Course Objective

No	Objectives
1	The students understand the basic concept and algorithms used in machine learning.
2	The students can build simple AI systems using machine learning algorithms

● Course Description

This course covers core concepts of AI and machine learning. It covers fundamentals and widely used techniques in machine learning applications. The students learn the theory of major methodologies and practice to solve simple problems by writing machine learning SW or applying open source SW. It also covers a brief review of mathematics required to understand machine learning theory, calculus, linear algebra, and statistics.

This course covers emerging techniques including deep learning and recurrent neural networks.

3. Course Managements

● Lecture Materials

Primary books/readings	Title	Pattern Recognition and Machine Learning (Optional)	Author	C. M. Bishop
	Publisher	Springer	Year	2006
Supplemental books/readings	Title	Deep Learning (Optional)	Author	I. Goodfellow, Y. Bengio, and A. Couville
	Publisher	The MIT Press	Year	2016

● Evaluations

Attendance Management	– Absences of 25% or more will result in failure in this course.							
Grading Policies and Rates (%)	Attendance	Midterm Exam	Final Exam	Quiz	Team Project	Homework	etc1 ()	etc2 ()
	0	0	0	0	10	90		
Honor Code	Refer 'HGU CSEE Standard' including 'Honor Code Guideline'							

● Class Activity Plan

Lecture	50%	Experiment	%	Practice	%
Team Project	%	Presentation	10%	Discussion	40%
etc1()	%	etc2()	%	etc3()	%
Total	100%				

● Assignments and Projects

No	Detail
1	TBD

4. Weekly Schedule

Week	Date	Lecture Topics	Evaluation and Homework
1		Machine learning introduction	
2		math review (Linear algebra)	
3		math review (Probability)	
4		Information Theory, Density Estimation	
5		Decision Theory	
6		Clustering	
7		Dimension Reduction	
8		Nonlinear Dimension Reduction	

Week	Date	Lecture Topics	Evaluation and Homework
9		Classification	
10		Ensemble Learning, Regression	
11		Neural Networks	
12		Numerical Optimization	
13		Regularization, Deep Learning	
14		Recommendation, SVM	
15		HMM	
16		Final Exam	

5. Notice/Additional Information

● Notice

The class includes online and offline. Offline classes will work as Q&A session on lectures, homework assignment.

● Additional Information

No	Contents
1	

6. Course Information for disabled students

● Lectures, assignments and evaluations in consideration of types and degree of the disability.