

Machine Learning & Pattern Recognition

Class Hours: 10:30~11:45AM, Tues. & Thurs.

Class Units: 3

Lecture Room: #539

Instructor: Tae-Seong Kim, Ph.D.

(Office) College of Electronics and Information, #717

(Tel) 031-201-3731

(Email) tskim@khu.ac.kr

Class Homepage: web.khu.ac.kr/~tskim

Prerequisites: Linear Algebra, Probability Theory, Information Theory, Programming Skills (Matlab, Python preferred).

Textbook

Pattern Classification, Richard O. Duda, Peter E. Hart, David G. Stork, Wiley-Interscience, Second Edition, 2002

Lecture Methods: lecture, discussion, homework, and handout

Class Schedule

Week 1: Basic concepts of pattern recognition: AI, machine learning, and pattern recognition

Week 2: Approaches to pattern recognition

Week 3: Distribution-free classification: Classifier design

Week 4: Distribution-free classification: Training algorithms

Week 5: Random vectors and their properties

Week 6: Statistical classification: Bayes decision theory

Week 7: Statistical classification: Bayes classifier

Week 8: Statistical classification: Parameter estimation

Week 9: Midterm Exam

Week 10: Statistical classification: Nonparametric techniques

Week 11: Statistical classification: Supervised learning

Week 12: Unsupervised classification: Similarity measures

Week 13: Unsupervised classification: Clustering

Week 14: Unsupervised classification: Component analysis

Week 15: Neural networks and Deep learning

Week 16: Final Exam

Homework: homework assignment/chapter

Grading system: attendance (10%), homework (20%), project (10%), midterm (30%), and final (30%)

Project: One machine learning & pattern recognition project (any topic of choice) and its report due by final date.