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
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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 (20%), midterm (25%), and final (25%)

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