Introduction to
Machine Learning and Pattern Recognition

Class Hours: 10:30~11:45; Tuesday & Thursday

Class Units: 3

Lecture Room: #B05

Instructor: Tae-Seong Kim, Ph.D.
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Textbook
   - Matlab Deep Learning (MDL) with Machine Learning, Neural Networks and AI, Apress
   - Pattern Recognition and Machine Learning, C. M. Bishop, Springer
   - Pattern Classification, Duda, Hart & Stock, Wiley & Sons

Lecture Methods: Lecture, discussion, homework, and handout

Class Schedule
Week 1: Introduction to Machine Learning and Pattern Recognition
Week 2: Machine Learning & Pattern Classification for AI
Week 3: Supervised vs. Unsupervised Learning vs. Reinforcement Learning
Week 4: Linear Classifiers, Statistics-free vs. Statistical Classifiers
Week 5: Perceptron
Week 6: Artificial Neural Network
Week 7: Training of Multi-layer Neural Network
Week 8: Neural Network and Classification
Week 9: Midterm Exam
Week 10: Deep Learning
Week 11: Convolutional Neural Network and its Application
Week 12: Other Deep Learning Networks
Week 13: Statistical Classifier: Bayesian Classifier
Week 14: Unsupervised Learning: PCA, Clustering
Week 15: Reinforcement Learning
Week 16: Final Exam

Homework: Chapter homework assignments, final deep learning project, presentation & report

Grading system: attendance (10%), homework (20%), deep learning term project & report (20%), midterm exam (25%), and final exam (25%)