

ECE5603 Machine Learning: Theories and Applications **(2019 Fall Semester)**

- **Lecturer: Prof. Rhee Man Kil (길 이 만)**

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Office: #23434 (Eng. Bldg. #1); Office Hour: MW 13:30--14:30

- **Scope:** Machine Learning is concerned with computer programs that automatically improve their performance through experience. This course covers the theories and applications of machine learning in variety of perspectives. Specifically, from the concept of machine learning, this course covers various topics of machine learning such as ANN models, decision trees, parametric and nonparametric estimation methods, evaluation of learning systems, computational learning theory, support vector machines, Bayesian belief networks, and recent topics of machine learning research.

- **Lecture schedule:**

Week	Topics
1	Introduction
2	Concept Learning, VS and C.E. algorithm
3	Decision Trees
4	Linear Models for Classification and Regression
5	Learning Algorithms
6	Artificial Neural Networks
7	Evaluation of Hypotheses
8	Midterm Exam (10/24)
9	Computational Learning Theory
10	Support Vector Machines
11	Bayesian Belief Networks
12	Committee Machines
13	Evolutionary Algorithms
14	Deep Learning Models
15	Deep Learning Models
16	Final Exam (12/19)

- **Text book:** Lecture Notes

- **References:**

T. Mitchell, "Machine Learning," McGraw-Hill, 1997.

B. Widrow and S. Stearns, "Adaptive Signal Processing," Prentice-Hall, 1985.

R. Duda et al., "Pattern Classification," Wiley-Interscience, 2001.

I. Goodfellow, "Deep Learning," MIT Press, 2016.

- **Web Page:** icampus

- **Grading:**

Project: 40%

Exam: 60% (Mid-Term: 30%; Final: 30%)