

[Spring, 2017]

Course Overview

Pattern Recognition (BRI623)



Heung-II Suk

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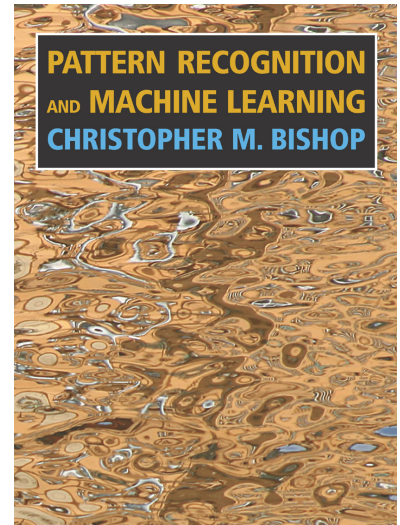
Department of Brain and Cognitive Engineering,
Korea University

Syllabus

- Course Title: Pattern Recognition
- Instructor: Heung-II Suk, Ph.D.
 - ▶ Affiliation: Department of Brain and Cognitive Engineering
 - ▶ Office: Science Library 617A
 - ▶ Office hours: Open door policy
 - Welcome to visit unless the office is closed.
 - ▶ Email: hisuk@korea.ac.kr; heungilsuk@gmail.com
- Language: English

Textbook

- Pattern Recognition and Machine Learning
- Christopher M. Bishop (Microsoft Research, UK)
- Editorial Reviews (from Amazon.com)
 - ▶ “A strong feature is the use of geometric illustration and intuition”
 - ▶ “This accessible monograph seeks to provide a comprehensive introduction to the fields of pattern recognition and machine learning. It presents a unified treatment of well-known statistical pattern recognition techniques.”



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Prerequisites

- Strong knowledge of linear algebra, probability and statistics, calculus
- Programming skill: Matlab, Python, C/C++, etc.
- Enthusiasm, genuine interest, active participation



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Course Descriptions

- Gentle introduction to PATTERN RECOGNITION
- Covers the topics of
 - ▶ fundamental theories and advanced methodologies
 - Linear models for regression and classification
 - Extend to non-linear models for real applications
 - Probabilistic models: perspectives of frequentist and Bayesian



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Course Schedule (Tentative)

- 1 Linear Models for Regression/Classification
- 2 Artificial Neural Networks
- 3 Deep Learning
- 4 Kernel Methods
- 5 Mixture Models and EM
- 6 Probabilistic Graphical Models
- 7 Continuous Latent Variables
- 8 Hidden Markov Model
- 9 Approximate Inference
- 10 Term-Project Presentation

The course schedule can be changed according to the progress!!!



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Course Objectives

Upon successful completion of this course,

- Understanding the mathematical theories of pattern recognition
- Good knowledge so that you apply PR methods to your own research



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Grade

- Attendance: 10% (DO NOT miss more than **two** times; otherwise **FAIL**)
- Mid/final-term exam: 30%
- Assignments: 30% (3 programming assignments)
- Term project: 30%
 - ▶ Proposal (5%): due on **March 26**
 - ▶ Presentation (5%): will be scheduled
 - ▶ Final Report (20%): due on **June 18**



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