



Sungkyunkwan University (SKKU) International Summer Semester (ISS) 2021

## Introduction to Machine Learning

Prof. Simon S. Woo, Applied Data Science Dept. at SKKU  
(<http://dash.skku.edu>)

### SHORT COURSE DESCRIPTION

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This goal of this course is to cover the fundamental concepts of machine learning, including problem formulations (e.g., selecting input features and outputs) and learning frameworks (e.g., supervised vs. unsupervised), as well as regression and classification algorithms. Applications to areas such as computer vision (e.g., character and digit recognition), natural-language processing (e.g., spam filtering) will be introduced.

### READING MATERIALS

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-Pattern Classification 2nd Edition, Duta et al. (ISBN-10: 0471056693)

<https://www.amazon.com/Pattern-Classification-Pt-1-Richard-Duda/dp/0471056693>

-Instructor's slides

### COURSE REQUIREMENTS AND GRADING

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Pass/fail grading (grade of 60 or above is Pass)

Attendance: 15% (**SKKU regulations require students to attend at least 80% of all classes.**)

HW and Quiz: 35%

Midterm Exam: 30%

Final Presentation: 20%

### COURSE SCHEDULE

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#### – WEEK I –

1. Introduction

2. Overview of Machine Learning

#### – WEEK II –

3. Linear Regression (I)

4. Linear Regression (II)

5. Logistic (Regression) Classification (I)

6. Logistic (Regression) Classification (II)

#### – WEEK III –

7. Softmax Regression

8. Support Vector Machine (I)

9. Support Vector Machine (II)

9. Midterm Exam

**– WEEK IV–**

10. Introduction to Deep Learning (I)

11. Introduction to Deep Learning (II)

12. Anomaly Detection

13. Final Presentation 1

13. Final Presentation 2