



FACULTY OF INFORMATION TECHNOLOGY

Machine Learning

(Học Máy)

Semester 2, 2023/2024

Information

▶ Name:
Machine Learning

▶ Credit points: 4

▶ Lectures: 45 h

▶ Labs: 30 h

▶ Name:
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▶ Email:
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FB Group: <http://tinyurl.com/yww7aw5p>

Course

Lecturer

Content

- ▶ Chapter 1. Introduction to Machine Learning
- ▶ Chapter 2. Regression
- ▶ Chapter 3. SVM classification
- ▶ Chapter 4. Neural networks
- ▶ Chapter 5. Markov model (optional)
- ▶ Chapter 6. Clustering

Assessment

- ▶ Labs: 15% (5% attendance + 10% Labs)
- ▶ Seminar: 15%
- ▶ Project: 20%
- ▶ Final exam: 50% (Quiz test)

Assessment: Labs

- ▶ Lab assignments:
 - 10% of the grade,
 - Programming assignments.
- ▶ Collaborations:
 - Individual homework assignments
- ▶ Programming language:
 - Python



Assessment: Labs (cont.)

- ▶ **Lab #1.** Python
- ▶ **Lab #2.** Pandas, numpy
- ▶ **Lab #3.** Scikit-learn
Preprocessing data
 - Load dataset
 - Split into training, testing datasets
 - Imputation
 - Standardisation & Normalisation
 - ...
- ▶ **Lab #4.** Linear Regression
- ▶ **Lab #5.** Logistic Regression
- ▶ **Lab #6.** Classification 1
- ▶ **Lab #7.** Classification 2
- ▶ **Lab #8.** Clustering
- ▶ **Lab #9.** Neural network 1
- ▶ **Lab #10.** Neural network 2

Assessment: Seminar

- ▶ 15% of the grade
- ▶ Present an ML topic (recommended by the lecturer)
- ▶ **2~4 students/group**
- ▶ Presentation (slides + code)

Assessment: Project

- ▶ 20% of the grade
- ▶ Build an ML-powered application
 - Research problem + algorithms
 - Datasets
 - Preprocessing data
 - Experimental results and their analysis
- ▶ **2 students/group**
- ▶ Write a research paper

Assessment: Final exam

- ▶ 50% of the grade
- ▶ All course contents are possible
- ▶ Quiz test (~ 50 questions, 75')

Datasets

- ▶ <http://kdd.ics.uci.edu/>
- ▶ www.kdnuggets.com/datasets
- ▶ <https://www.kaggle.com/>
- ▶ ...



kaggle

Tools



Amazon
Machine
Learning



Deep Learning with
WEKA



Apache
mahout



PyTorch

將軍

Sho gun



Keras
A deep learning library

POPULAR ML

TOOLS

IN

2021



Machine Learning with Scikit-Learn



TensorFlow



rapidminer

Google
colab



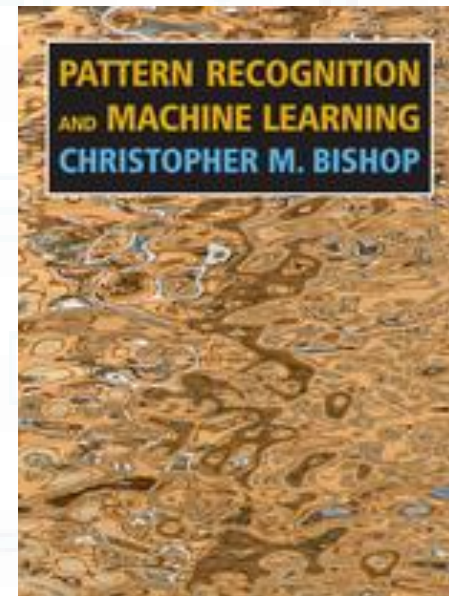
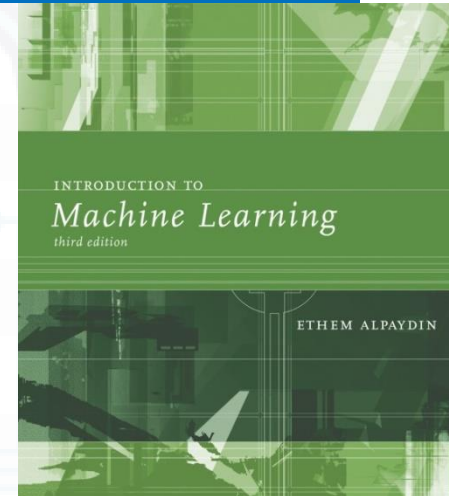
KNIME



jupyter

Material

- ▶ Course textbooks:
 - Ethem Alpaydin, *Introduction to machine learning*, MIT, Third Edition
 - Christopher M. Bishop, *Pattern Recognition and Machine Learning*, Springer, 2006
- ▶ Other textbooks:
 - Kevin Murphy: *Machine Learning: a Probabilistic Perspective*
 - David Mackay: *Information Theory, Inference, and Learning Algorithms*





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