FACULTY OF INFORMATION TECHNOLOGY

Machine Learning

(Máy Học)

Semester 2, 2022/2023

Information

- Name:
  Machine Learning
- Credit points: 4
- Lectures: 45 h
- Labs: 30 h

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- Email:
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FB Group: https://tinyurl.com/wv34wh49

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: 10%
- Seminar: 20%
- 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

- 20% of the grade
- Present an ML topic (recommended by the lecturer)
- **2~4 students/group**
- Demo (slides + code)

Assessment: Project

- 20% of the grade
- Build an ML-powered application
  - Research problem + algorithms
  - Datasets
  - Preprocessing data
  - Experimental results and their analysis
- **2~4 students/group**
- Demo (slides + code)

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/
- ...

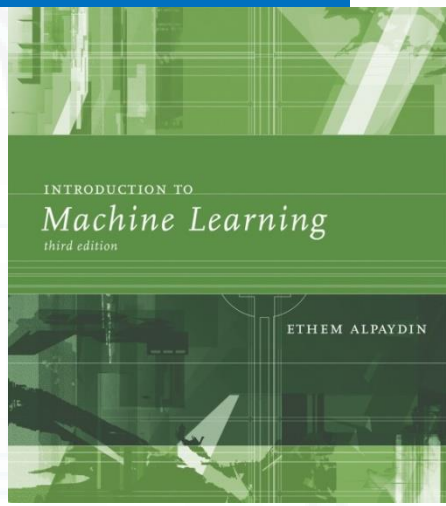
kaggle

Tools

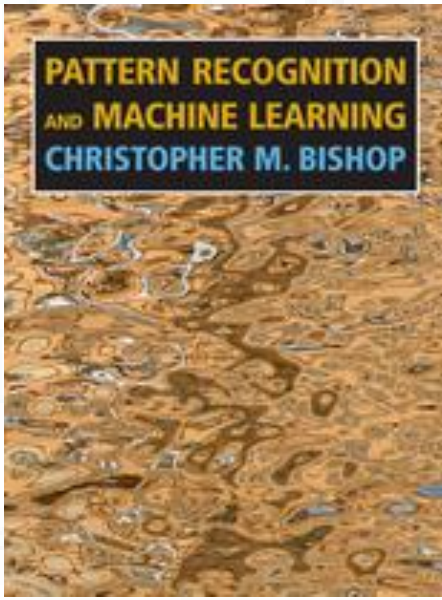

Amazon Machine Learning
Deep Learning with WEKA
Apache mahout
POPULAR ML TOOLS IN 2021
PyTorch
learn
Machine Learning with Scikit-Learn
将軍
sho gun
TensorFlow
K Keras
A deep learning library
rapidminer
Google colab
KNIME
jupyter

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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