503044

INTRODUCTION TO MACHINE LEARNING

Introduction

LÊ ANH CƯỜNG

Department of Computer Science

Faculty of Information Technology

Ton Duc Thang University

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Course Information

- Module's name:

  INTRODUCTION TO MACHINE LEARNING
- Code:
- Credits: 3 (3.0)
- Prerequisite: Data structures and algorithms (501043)

Course Learning Outcomes (CLOs) (course objective)

- Memorize concepts, techniques and models in Machine Learning.
- Understand concepts, techniques and models in Machine Learning
- Apply techniques in machine learning to solve problems
- Analyze and evaluate different machine learning techniques and choose the appropriate one for a particular problem.

Content of the course

- The course covers basic and important concepts, techniques and models in machine learning.
- Introduce supervised, unsupervised methods and techniques. Implement learnt techniques by Python and apply to solve some practical problems.
- Analyze and evaluate machine learning methods.
- Introduce some advanced methods and techniques in machine learning.

Syllabus

1. Basic concepts and a general model
2. Python introduction for machine learning
3. Linear regression and model evaluation
4. Naïve Bayes classification and K-nearest neighbor
5. Neural Networks (1)
6. Neural Networks (2)
7. Support Vector Machines
8. Applying machine learning
9. Applying machine learning
10. Recurrent Neural Networks
11. Unsupervised learning and methods
12. Ensemble learning and methods
13. Applying machine learning
14. Seminar and project presentation
15. Seminar and project presentation

Textbook & References

- **Textbook:**

[1]. Jerome H. Friedman, Robert Tibshirani, and Trevor Hastie. The Elements of Statistical Learning: Data Mining, Inference, and Prediction, Second Edition (Springer Series in Statistics) 2nd Edition, 2017

[2] Tom Mitchell. Machine Learning. New York, McGraw-Hill, 1997.

- **Supplementary Readings:**

[3] Ian Goodfellow and Yoshua Bengio and Aaron Courville. Deep Learning. MIT Press. 2016.

Requirements

- Attend class sessions
- Participate class activities
- Complete assignments
- Complete projects
- Complete seminars

Assessement

Category	Weight (%)	Type of questions
Progress 1	10	Process exercises
Progress 2	20	Assignments
Mid-term	20	Project + presentation
Final term	50	Seminar (method+project)