Natural Language Processing Applications

Lecture 1: Course Introduction

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KHOA CÔNG NGHỆ THÔNG TIN
TRƯỜNG ĐẠI HỌC KHOA HỌC TỰ NHIÊN

- Course Introduction
- Course Evaluation
- Course Outline
- References

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COURSE INTRODUCTION

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Course Information

- Course name: Natural Language Processing Applications
- Credits: 4
  - Lecture: 45 hrs
  - Lab: 30 hrs
  - Self-study: 90 hrs
- Knowledge block: Elective - Computer Science
- Prerequisite: Introduction to Natural Language Processing

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COURSE OBJECTIVES

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Course Objectives

- Understand the basic applications of Natural Language Processing (NLP)
- Develop skills in describing, analyzing and modeling a real-world NLP application
- Know the methods/measures used to evaluate NLP applications
- Build some basic NLP applications

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COURSE EVALUATION

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Course Evaluation

- Lecture:
  - Assignments:
    - Quizzes: 5%
    - Homework: 5%
  - Projects:
    - Project1 (Seminar): 30%
    - Project2 (Application): 40%
- Lab:
  - Weekly lab work: 20%

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COURSE OUTLINE

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Lecture 1. Introduction

- Introduction to NLP Applications
- Development status of NLP Applications

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Lecture 2. Language Models

- Introducing n-gram
- Estimating the probability n-gram
- Model evaluation
- Smoothing methods

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Lecture 3. Text Classification

- Introduction
- Naive Bayes
- Model evaluation

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Lecture 4. Text Clustering

- Introduction
- Word Clustering
- Phrase Clustering
- Text Clustering
- Evaluation

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Lecture 5. Text Similarity

- Introduction to Text Similarity
- Text Similarity Approaches
- Model Evaluation

Lecture 6. Text Summarization

- Introduction
- Text Summarization Approaches
- Evaluation

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Lecture 7. Readability

- Readability Overview
- Related Work
- Dataset
- Evaluation

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Lecture 8. Machine Translation

- MT Introduction
- Word-based MT
- Phrase-based MT
- Evaluation

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Lecture 9. Building NLP Applications

- Sample Applications
- Notes in Building NLP Applications

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REFERENCES

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Tài liệu tham khảo

- Vietnamese:
  - **Đinh Điền**, Xử Lý Ngôn Ngữ Tự Nhiên, 2006, NXB ĐHQG.
- English:
  - **Chris Manning and Hinrich Schütze**, Foundations of Statistical Natural Language Processing, MIT Press. Cambridge, MA: May 1999.
  - **Dan Jurafsky and James H. Martin**, Speech and Language Processing. An Introduction to Natural Language Processing, Computational Linguistics, and Speech Recognition. Third Edition draft, 2020.
  - **Kevyn Collins-Thompson**, Computational Assessment of Text Readability, 2014.
  - J**iapeng Wang and Yihong Dong**, Measurement of Text Similarity: A Survey, Information 2020.