Natural Language Processing

Programme course

6 credits

Språkteknologi

TDDE09

Valid from: 2018 Spring semester

Determined by

Board of Studies for Computer Science
and Media Technology

Date determined

Main field of study

Information Technology, Computer Science and Engineering, Computer Science

Course level

Second cycle

Advancement level

A1X

Course offered for

- Computer Science, Master's Programme
- Computer Science and Engineering, M Sc in Engineering
- Information Technology, M Sc in Engineering
- Computer Science and Software Engineering, M Sc in Engineering

Entry requirements

Note: Admission requirements for non-programme students usually also include admission requirements for the programme and threshold requirements for progression within the programme, or corresponding.

Prerequisites

- discrete mathematics
- good knowledge of programming, data structures, and algorithms
- basic knowledge of probability theory and optimisation

Previous courses in machine learning are recommended but no requirement for the course.

Intended learning outcomes

Natural Language Processing (NLP) develops techniques for the analysis and interpretation of natural language, a key component of smart search engines, personal digital assistants, and many other innovative applications. The goal of this course is to provide students with a theoretical understanding of and practical experience with the advanced algorithms that power modern NLP. The course focuses on methods that involve machine learning on text data.

On completion of the course, the student should be able to:

1. explain state-of-the-art NLP algorithms and analyse them theoretically
2. implement NLP algorithms and apply them to practical problems
3. design and carry out evaluations of NLP components and systems
4. seek, assess and use scientific information within the area of NLP

Course content

- state-of-the-art NLP algorithms for the analysis and interpretation of words, sentences, and texts
- relevant machine learning methods based on statistical modelling, combinatorial optimisation, and neural networks
- NLP applications
- validation methods
- NLP tools, software libraries, and data
- NLP research and development

Teaching and working methods

The course is given in the form of lectures, lab sessions, and supervision in connection with a minor project.

Examination

KTR1	Optional written tests	0 credits	U, G
UPG1	Project assignments	2 credits	U, 3, 4, 5
LAB1	Practical assignments	2 credits	U, 3, 4, 5
TEN1	Written examination	2 credits	U, 3, 4, 5

The optional written tests give bonus points for the first attempt at the written examination. The final grade for the course is the median of the grades awarded for LAB1, TEN1, and UPG1.

Grades

Four-grade scale, LiU, U, 3, 4, 5

Other information

Supplementary courses

Text Mining

Department

Institutionen för datavetenskap

Director of Studies or equivalent

Jalal Maleki

Examiner

Marco Kuhlmann

Course website and other links

http://www.ida.liu.se/~TDDE09/

Education components

Preliminary scheduled hours: 48 h
Recommended self-study hours: 112 h

Course literature

Compendia

Lecture notes provided by the department.