Natural Language Processing

Programme course

6 credits

Språkteknologi

TDDE09

Valid from: 2017 Spring semester

Determined by
Board of Studies for Computer Science
and Media Technology

Date determined
2017-01-25

Main field of study
Information Technology, Computer Science and Engineering, Computer Science

Course level
Second cycle

Advancement level
A1X

Course offered for
- Computer Science and Engineering, M Sc in Engineering
- Computer Science and Software Engineering, M Sc in Engineering
- Information Technology, M Sc in Engineering
- Computer Science, Master's programme

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:

- explain state-of-the-art NLP algorithms and analyse them theoretically
- implement NLP algorithms and apply them to practical problems
- design and carry out evaluations of NLP components and systems
- 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 seminars 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

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

Course literature

Additional literature

Compendia

Lecture notes provided by the department.