GHENT UNIVERSITY

Course Specifications

Valid in the academic year 2021-2022

Natural Language Processing (A704066)

Due to Covid 19, the education and assessment methods may vary from the information displayed in the schedules and course details. Any changes will be communicated on Ufora.

Course size *(nominal values; actual values may depend on programme)*

Credits 5.0 **Study time 150 h** **Contact hrs** 45.0h

Course offerings and teaching methods in academic year 2021-2022

A (semester 2)	English	Gent	lecture: plenary exercises	22.5h
			self-reliant study activities	22.5h

Lecturers in academic year 2021-2022

De Langhe, Loic	LW22	staff member
Labat, Sofie	LW22	staff member
Hoste, Veronique	LW22	lecturer-in-charge

Offered in the following programmes in 2021-2022	**crdts**	**offering**
Master of Arts in Technology for Translation and Interpreting	5	A
Master of Arts in Advanced Studies in Linguistics(main subject Natural Language Processing: Theory and Practice)	6	A
Postgraduate Certificate Computer-Assisted Language Mediation	5	A

Teaching languages

English

Keywords

Natural language processing, computational linguistics, language and AI

Position of the course

In this course, we cover the fundamentals of natural language processing. We learn how algorithms can be used to teach computers artificial language understanding. Given the ambiguity of language, we start our discussion at the morphological and word level, building up via the syntactic level, to end with the complexity of semantic and discourse modeling. Different applications (sentiment analysis, emotion detection, information extraction, dialog systems and chatbots) are discussed as well as some predominant methodologies (machine learning, deep learning) and evaluation metrics.

Contents

Topics:

- Regular expressions, text normalization, edit distance, dynamic programming
- Lexical level: n-gram language models; vector semantics
- Syntactic level: part-of-speech tagging and syntactic parsing
- Semantic level: word sense disambiguation, LSA, semantic role labeling, coreference resolution
- Machine learning: traditional approaches versus neural networks
- Applications: information extraction, sentiment analysis and emotion detection, dialog systems and chatbots

Initial competences

Basic computer skills

Final competences

1 Have a basic knowledge on natural language processing (NLP) and artificial intelligence (AI) and understand the research challenges and the societal impact of NLP.
2 Ability to critically reflect on the state of the art in NLP.

3 Have the basic skills to conceive a NLP system from scratch and to interpret its results.

Conditions for credit contract

This course unit cannot be taken via a credit contract

Conditions for exam contract

This course unit cannot be taken via an exam contract

Teaching methods

Lecture: plenary exercises, Self-reliant study activities

Extra information on the teaching methods

Combined oral lectures and practical classes.

Learning materials and price

Slides and other material will be made available through Ufora.

References

Daniel Jurafsky & James Martin, "Speech and Language Processing. An Introduction to Natural Language Processing, Computational Linguistics, and Speech Recognition" (ed3).

Course content-related study coaching

Individual coaching after class or after appointment with the tutor.

Assessment moments

end-of-term and continuous assessment

Examination methods in case of periodic assessment during the first examination period

Examination methods in case of periodic assessment during the second examination period

Written examination with open questions

Examination methods in case of permanent assessment

Skills test, Written examination with open questions

Possibilities of retake in case of permanent assessment

examination during the second examination period is possible

Extra information on the examination methods

Skills test: the students will have to complete a number of assignments throughout the course.

Calculation of the examination mark

First session:

- Skills test (50%)
- Written exam (50%)

Second session:

- Written exam (100%)

In order to pass, students must participate in at least 80% of all evaluations and obligatory activities such as guest lectures. If a student is absent due to a legitimate reason, an individual alternative assignment can be given.

Facilities for Working Students

Class attendance is strongly recommended.
Limited possibility of feedback via e-mail, restricted to answering specific questions.