Natural Language Processing

Christian Rossi

Academic Year 2024-2025

Abstract

This course introduces students to the challenges and methodologies related to the analysis and production of natural language sentences, both written and spoken. The course explores the current role of stochastic models and Deep Learning, as well as new opportunities to combine traditional, formally based models with stochastic models. Topics covered include morphology, syntax, semantics, pragmatics, voice, prosody, discourse, dialogue, and sentiment analysis.

The course includes practical exercises where students can test the models and techniques presented in the lectures. Applications explored during the course will include: human-machine and human-human interaction analysis based on language; linguistic and prosodic analysis and generation for rehabilitation; pattern recognition and research for sentiment analysis in critical interactions; complexity analysis in text and overall spoken communication; and the development of user profiles that account for expression preferences in forensic, educational, and clinical contexts.

Contents

CHAPTER 1

Introduction