Natural Language Processing

Course Administration & Presentation

Master Degree in Computer Engineering University of Padua Lecturer : Giorgio Satta

https://stem.elearning.unipd.it/course/view.php?id=7937

Natural Language Processing Presentation & Administration

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Class hours

Thurs 12:30-14:30, **under email appointment** Building: DEI/G, fourth floor Zoom meeting: https://unipd.zoom.us/j/82934199797

	Wed	Thurs	Fri
10:30-11:30	room Me		room De
11:30-12:30	room Me		room De
12:30-13:30		office hours	
13:30-14:30		office hours	

PRELIMINARIES 1 Natural language processing: Introduction to Natural Language Processing, Lisenstein, Chapter 1 Speech and Language Processing. Jurafsky and Marin, Chapter 1 2 1 Essentials of linguistics Sides from the lecture 3 2 Text normalization Speech and Language Processing, Jurafsky and Marin, Chapter 1 4 2,3 Word embeddings Speech and Language Processing, Jurafsky and Marin, Chapter 6 Introduction to Natural Language Processing, Lisenstein, Chapter 14, 5 5 ChatBot Speech and Language Processing, Jurafsky and Marin, Chapter 3, Introduction to Natural Language Processing, Jurafsky and Marin, Chapter 6, Introduction to Natural Language Processing, Jurafsky and Marin, Chapter 6, Stides from the lecture 7 Stafe Language models Speech and Language Processing, Jurafsky and Marin, Chapter 10, Sides from the lecture 7 Structure Darabit Speech and Language Processing, Jurafsky and Marin, Chapter 8 Introduction to Natural Language Processing, Jurafsky and Marin, Chapter 17 8 6 Phrase-Structure Parsing (part I) Speech and Language Processing, Jurafsky and Marin, Chapter 17 9 Speech and Language Processing, Jurafsky and Marin, Chapter 17 Speech and Language Processing, Jurafsky and Marin, Chapter 17 10 8 Dependency Parsing Speec	LECTURE	WEEK	TOPIC	BOOK & CHAPTERS			
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9 7 Phrase-Structure Parsing (part II) Speech and Language Processing, Jurafsky and Martin, Chapter 17 10 8 Dependency Parsing Speech and Language Processing, Jurafsky and Martin, Chapter 18 11 9 Senantic Parsing Speech and Language Processing, Jurafsky and Martin, Chapter 18 END-TO-END APPLICATIONS 12 9, 10 Machine Translation Speech and Language Processing, Jurafsky and Martin, Chapter 13 13 11 Question Answering Speech and Language Processing, Jurafsky and Martin, Chapter 14	8	6	Phrase-Structure Parsing (part I)	Speech and Language Processing, Jurafsky and Martin, Chapter 17			
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9 Semantic Parsing Speech and Language Processing, Jurafsky and Martin, Chapter 20 END-TO-END APPLICATIONS 12 9,10 Machine Translation Speech and Language Processing, Jurafsky and Martin, Chapter 13 13 11 Question Answering Speech and Language Processing, Jurafsky and Martin, Chapter 14	10	8	Dependency Parsing	Speech and Language Processing, Jurafsky and Martin, Chapter 18			
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12 9, 10 Machine Translation Speech and Language Processing, Jurafsky and Martin, Chapter 13 13 11 Question Answering Speech and Language Processing, Jurafsky and Martin, Chapter 14	END-TO-END APPLICATIONS						
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14 11, 12 Dialogue Systems Speech and Language Processing, Jurafsky and Martin, Chapter 15	14	11, 12	Dialogue Systems	Speech and Language Processing, Jurafsky and Martin, Chapter 15			
CONCLUSIONS							
15 12 Wrap-up Slides from the lecture	15	12	Wrap-up	Slides from the lecture			

SESSION	WEEK	TASK	MODEL
1	4	Word embedding	Skip-gram
2	5	Fine-tuning	Bert
3	8	Dependency parsing	Recurrent neural network
4	9	Text generation	Transformer

Course requirements

Students should have basic knowledge of the following subjects

- calculus + linear algebra
- machine learning + deep learning
- probability theory + information theory
- computer algorithms + dynamic programming
- automata theory + rewriting grammars + formal languages
- Python + NumPy + PyTorch

The class also uses basic knowledge from **linguistics**: all of the working notions in linguistics will be properly introduced.

Speech and Language Processing (3rd ed., draft) Dan Jurafsky and James H. Martin January 7, 2023 https://web.stanford.edu/~jurafsky/slp3/

Several chapters about machine learning, these will be given for granted.

Additional textbooks, for consultation only:

Introduction to Natural Language Processing

Jacob Eisenstein MIT Press, October 2019

Natural Language Processing A Machine Learning Perspective Yue Zhang and Zhiyang Teng Cambridge University Press, January 2021 Additional material and resources available through moodle page of the class

- slides, videos and notebooks
- three forums for class, lab, and project discussion

Paper presentation:

- choose a scientific article from a given list of 2023 NLP conferences
- read, understand, and record a short video presentation

NLP system:

- for the announced task/dataset, provide
 - exploratory data analysis
 - baseline
 - neural approach
 - result comparison with state-of-the-art (SotA) and discussion
- report your project in a notebook

Written test	70%
Project	
1. NLP system	25%
2. article presentation	05%
	100 %

Project groups of maximum two people.

Project must be presented **before** earliest written test of the students in the group.

To pass the final exam you need to score 18/30 or above for both the written test and the project.

Academic year 2022-23



Academic year 2022-23



Academic year 2022-23

	w/d	subm	fail	pass	acpt
30/06/2023	00	31	08	23	74%
21/07/2023	02	31	10	21	68%
20/09/2023	01	16	04	12	75%
21/02/2024	??	??	??	??	??%

Evaluation





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