**Computational Argumentation** 

## **Organizational Course Information**

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# **General** information

- Course L.079.05811
  - Lectures. Henning Wachsmuth
  - Tutorials. Maja Stahl (+ Carlotta Quensel in lab)
  - Language. English (+ Python in lab)

### Information



- Web. <u>https://www.ai.uni-hannover.de/de/teaching/courses/ca</u>
- Stud.IP. <u>https://studip.uni-hannover.de/dispatch.php/course/overview?cid=c442d998236ec2fe4cbe0a98d4bf42bb</u>

### Time and location

- Lectures. Tuesday 13:00–14:30, Welfengarten 1, Room A310
- Tutorials. Wednesday 10:30–12:00, Appelstr. 11, Room A145 Notice: The lab "Argumentation Technology" (Wednesday 15:15–18:15) is roughly aligned with this course

#### Consultation?

• Set up appointment with me via e-mail: <u>h.wachsmuth@ai.uni-hannover.de</u>

- Courses
  - Introduction to Natural Language Processing (bachelor, summer). NLP fundamentals, from rule-based methods to statistical methods
  - Statistical Natural Language Processing (master, winter). Core NLP, from statistical methods to neural methods
  - Computational Argumentation (master, summer). State-of-the-art NLP, advanced methods in a specific research context
- Labs and projects
  - Argumentation Technology (master, summer)
  - Human Language Technology (master, winter)
  - Ethical Artificial Intelligence (master, winter)
- Seminars
  - Natural Language Processing (bachelor, winter)
  - Natural Language Generation (master, summer)

# Topic

### This course

- Computational analysis and synthesis of natural language arguments Introductory overview of the topic today
- Builds upon natural language processing (NLP)
- Knowledge of basics of NLP (or at least machine learning) expected There will be a high-level recap in Lecture part II, but not more
- Recommended courses before (alternatives)
  - Statistical Natural Language Processing. Master, Wachsmuth
  - Text Mining. Master, Sikdar
  - Artificial Intelligence 2. Master, Nejdl
  - Machine Learning. Bachelor, Rosenhahn
- Goal of this course
  - Understand main concepts and methods of an advanced NLP topic
  - Learn to develop computational argumentation methods and applications
  - Maybe learn to argue better ;)

## Course elements

- Teaching
  - Lectures. Presentation of course content (and organizational info)
  - Tutorials. Presentation of assignments and solutions, Q&A
- Assignment sheets (details in tutorial)
  - Amount. 5 in total, bi-weekly (all pencil-and-paper, programming in lab only) First sheet published on May 5, to be submitted by May 19, 23:59 (UTC+2)
  - Group work. You need to submit with 3-4 people
  - Bonus. (a) Min. 60% of all points: exam grade + 1/3, (b) Min. 85%: + 2/3 Example for (b): grade of 2.7 is changed to 2.0; only grades < 5.0 can be improved

#### Exams

- Oral exam. 30 minutes, questions on all lecture parts, English
- Tentative dates. Multiple days, likely early August + some time in September
- Registration. May 15–31, 2025

Example questions will be provided; more details on the exam later

# Tentative lecture schedule

Basics

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- April 15 Introduction to computational argumentation
- April 22
  Basics of natural language processing
- April 29–May 6 Basics of argumentation
- Methods
  - May 6 May 20 Argument mining
  - May 20 June 17 Argument assessment
  - June 17 July 1 Argument generation
- Applications
  - June 8 July 15 Applications of computational argumentation
  - July 15
    Conclusion
- Notice
  - No lecture on June 10 due to Pentecoast

# Literature and code basis (not obligatory)

### Books

- Speech and Languange Processing, ed. 3 Free draft online: <u>https://web.stanford.edu/~jurafsky/slp3/</u>
- Speech and Languange Processing, ed. 2 (Jurafsky and Martin, 2009)
- Argumentation Mining (Stede and Schneider, 2018)
- Conference and journal papers
  - References to papers will occur in course content
  - Most papers can be found online (e.g., at <a href="https://www.aclweb.org/anthology/">https://www.aclweb.org/anthology/</a>)
- Code (for the lab only)
  - Different general NLP libraries available freely
    <u>https://huggingface.co</u>, github.com/stanfordnlp/stanza/, www.nltk.org, spacy.io, pypi.org/project/polyglot/, ...
  - Papers often provide a URL where code can be found
  - Still, extensive own implementation needed in programming tasks



# References

- Jurafsky and Martin (2009). Daniel Jurafsky and James H. Martin (2009). Speech and Language Processing: An Introduction to Natural Language Processing, Speech Recognition, and Computational Linguistics. 2nd edition, Prentice-Hall, 2009.
- Stede and Schneider (2018). Manfred Stede and Jodi Schneider. Argumentation Mining. Synthesis Lectures on Human Language Technologies 40, Morgan & Claypool, 2018.