Introduction to Sentiment Analysis
-- Session 1: Introduction --

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Outline

- What is Sentiment Analysis?
- Administrative Matters
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What is Sentiment Analysis?

- Sentiment Analysis deals with the (automatic) detection and analysis of texts that express opinions, evaluations, emotions, and uncertainty.
- *I think the decision was right.*
- *This movie is absolutely boring.*
- *I am frustrated.*
- *This idea of yours could work.*
Subtasks in Sentiment Analysis

- What is subjective language?
- How can we automatically determine the polarity of a text?
- How can we automatically extract the entities that are involved in an opinion expressed in text?
- Beyond that, take also into consideration:
  - Emotions
  - Uncertainty
  - ...
Subjectivity Detection

- Automatically identify texts that convey subjectivity:
  - *I hate this book.*
  - *The bus leaves at 9:30h.*

- Are there particular words or phrases that convey subjectivity?
  - *awful, okay, superb, expect, thought*

- Are there certain syntactic clues that convey subjectivity?
  - *Adjectives are more indicative than other parts of speech.*
Polarity Classification

- Automatically determine the polarity of texts:
  - Peter *hates* pancakes.
  - Mary *loves* pizza.
- One may also determine the degree of polarity:
  - nice << great << excellent
Polarity Classification

- Need to know which words carry polarity.
  - good, clever, fantastic, excellent
  - bad, idiot, horrible, shocking
- Need to consider context:
  - Negation:
    - Peter does not hate pancakes.
  - Irony:
    - This is the greatest operating system ever; it crashes every 5 minutes on my laptop!
Opinion Holder/Target Extraction

- Holder/source extraction of the opinion:
  - In a recent interview, [Noam Chomsky] praised Snowden.
  - This is total nonsense. [speaker]

- Target extraction of the opinion:
  - In a recent interview, Noam Chomsky praised [Snowden].
  - [This] is total nonsense.
Other Parameters to Consider

- **Granularity:**
  - document
  - sentence
  - phrase or word

- **Domain:**
  - Train and test on the same domain (*in-domain classification*).
  - Train and test in different domains (*cross-domain classification*).

- **Language:**
  - Train and test on the same language (*monolingual setting*).
  - Train and test on different languages (*cross-lingual setting*).
Why do we want to do Sentiment Analysis?

- General aim of Natural Language Processing is to find algorithms to compute the meaning of text.
- Sentiment analysis can be regarded as one building block towards that goal.
Why do we want to do Sentiment Analysis?
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One of the most popular applications is automatically classifying sentiment in movie reviews.
Why do we want to do Sentiment Analysis?
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Various companies of commercial products are keen to know the general sentiment of customers towards their products/brand.
Why do we want to do Sentiment Analysis?
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Another application is monitoring popular opinion on political issues (e.g. prior to a general election).
Why do we want to do Sentiment Analysis?
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► Many hotel reviews are fakes (e.g. praising a bad hotel).
► Use Sentiment Analysis to filter this opinion spam.
Aims of this Course

- What is Sentiment Analysis?
- Administrative Matters
Aims of this Course

- Learn something about Sentiment Analysis.
- ... from a linguistic point of view.
- Learn to read and understand scientific literature.
- Learn to present a paper.
- Learn to write a term paper.
Aims of this Course

- **Jump in at the deep end:**
  - No textbook.
  - We will read research publications.

- **Difference to textbooks:**
  - Condensed language.
  - Terminology may vary.
  - Basic research (*task/evaluation may be a bit abstract*).
  - There may be things you will have to look up yourself.
  - Establish connections to between different papers yourself.
Requirements for Passing the Course

- Oral presentation
- Term paper
- Reviewing a paper
- Constant active participation
- You are allowed to be absent without excuse for only one session!
Oral Presentation

- Length: up to 45 minutes (excluding discussion).
- In German or English.
- Based on one paper (see course webpage).
- You are welcome to include more related papers!
- We have a discussion after each oral presentation:
  - You will have to answer questions!
  - Make sure you really understood the problem discussed in your paper!
Oral Presentation

- I offer every student an additional (individual) meeting prior to the oral presentation:
  - Discuss open questions.
  - Feedback on presentation draft.
- Arrangement of appointment:
  - Send in draft at least 8 days prior to your presentation!
  - (Time span may be different for the first talk!)
Term Paper

- Write an essay on the paper you orally presented.
- Length: 10-15 pages
- In German or English
- More details regarding the format will be provided in tomorrow’s session.
- Use LaTeX!
- Deadline for term paper: TBA
Reviewing a Paper

- Review a paper that you do not orally present.
- You are given the main responsibility of the discussion session after the student presentation of that paper:
  - Ask questions about the paper.
  - Get involved into the discussion.
  - Show that you have understood the paper and thought about the problem/task presented.
How is the final mark computed?

- **Weighting:**
  - 40% oral presentation
  - 40% term paper
  - 20% reviewing

- If the final “score” is between two grades, course participation will be considered.
Timeline

➢ Today:
  ➢ Recap on machine learning and evaluation
  ➢ Subjectivity Detection

➢ Tomorrow:
  ➢ How to present a paper
  ➢ How to write a term paper

➢ From 14th October onwards:
  ➢ One student presentation per week.
  ➢ Preliminary schedule on webpage.
What to do next?

- Tell me which paper you want to present.
  - Give a list of 5 papers sorted by priority
  - deadline: 4th October (*Friday*)
  - *Need a volunteer for the first session until tomorrow (end of last session)!*
If you have further questions

- Ask now!
- Another good point in time: at the end of each session.
- *Don‘t* try to discuss complex issues via email!
- Ask for an appointment instead.