# Applications of Computational Linguistics

3 credits

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## **Topics**

- Fake news and conspiracy theories in social media
- Hate speech, misogyny, sexism in texts and memes
- Figurative language processing: humour, irony and sarcasm
- Author profiling in social media: age, gender, personality, native language, language variation
- Sentiment analysis and deceptive opinions

# Bibliography

- D. Jurafsky, J. H. Martin. Speech and Language Processing. An Introduction to Natural Language Processing, Computational Linguistics, and Speech Recognition. 3rd edition, 2023 https://web.stanford.edu/~jurafsky/slp3/ed3book.pdf
- R. Mitkov (Ed.) **The Oxford Handbook of Computational Linguistics**. Oxford University Press. 2003
- J. Pennebaker. The secret life of pronouns: What our words say about us. Bloomsbury Publishing, 2011
- Bing Liu. Sentiment Analysis: mining opinions, sentiments, and emotions. How to build a Sentiment Analysis system, and much more. Cambridge University Press, 2015
- Bing Liu. Sentiment Analysis and Opinion Mining: A comprehensive introduction and survey. Morgan & Claypool, 2012
- F.A. Pozzi, E. Fersini, E. Messina, and B. Liu (Eds.) **Sentiment Analysis** in **Social Networks**. Elsevier Science and Technology, 2017

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- E. Cambria, D. Das, S. Bandyopadhyay, A. Feraco (Eds). A Practical Guide to Sentiment Analysis. Socio-affective Computing, Springer, 2017
- G. Ruffo, A. Semeraro, A. Giachanou, P. Rosso. Studying Fake News Spreading, Polarisation Dynamics, and Manipulation by Bots: a Tale of Networks and Language. In: Computer Science Review, vol. 47, 2023 <a href="https://doi.org/10.1016/j.cosrev.2022.100531">https://doi.org/10.1016/j.cosrev.2022.100531</a>
- P. Rosso, B. Chulvi. Los prejuicios en las sociedades digitales: Identificación automática de estereotipos y hate speech. In: Archiletras, vol. vi, pp. 171-188, 2021
- P. Rosso, M. Potthast, B. Stein, E. Stamatatos, F. Rangel, W. Daelemans. **Evolution of the PAN Lab on Digital Text Forensics**. In: Ferro N., Peters C. (Eds.). Information Retrieval Evaluation in a Changing World Lessons Learned from 20 Years of CLEF. The Information Retrieval Series, vol. 41, Springer, 2019

## Sentiment analysis in social media

- 1. Callenges of Sentiment Analysis in Social Networks: An Overview
- 2. Beyond Sentiment: How Social Network Analytics Can Enhance
- 3. Semantic Aspects in Sentiment Analysis
- 4. Linked Data Models for Sentiment and Emotion Analysis in Social Networks
- 5. Sentic Computing for Social Network Analysis
- 6. Sentiment Analysis in Social Networks: A Machine Learning Perspective
- 7. Irony, Sarcasm, and Sentiment Analysis
- 8. Suggestion Mining From Opinionated Text
- 9. Opinion Spam Detection in Social Networks
- 10. Opinion Leader Detection
- 11. Opinion Summarization and Visualization
- 12. Sentiment Analysis with SpagoBI
- 13. SOMA: The Smart Social Customer Relationship Management Tool: Handling Semantic Variability of Emotion Analysis with Hybrid Technologies
- 14. The Human Advantage: Leveraging the Power of Predictive Analytics to Strategically Optimize Social Campaigns
- 15. Price-Sensitive Ripples and Chain Reactions: Tracking the Impact of Corporate Announcements with Real-Time Multidimensional Opinion Streaming
- 16. Conclusions and Future Directions

### A practical guide to sentiment analysis

- 1. Affective Computing and Sentiment Analysis
- 2. Many Facets of Sentiment Analysis
- 3. Reflections on Sentiment/Opinion Analysis
- 4. Challenges in Sentiment Analysis
- 5. Sentiment Resources: Lexicons and Datasets
- 6. Generative Models for Sentiment Analysis and Opinion Mining
- 7. Social Media Summarization
- 8. Deception Detection and Opinion Spam
- 9. Concept-Level Sentiment Analysis with SenticNet

### Lectures Thursday 3-6 PM

#### Evaluation

- 20% practical work (lab: NLTK)
- 60% participation in the **oppositional thinking analysis** (conspirative theories vs critical thinking narratives) **PAN** shared task, report and presentation (\*)
- 20% questionnaire (topics of theory) or participation in the **EXIST** shared task on **sexism identification in memes**
- (\*) presentation on PAN or EXIST

#### Shared task PAN

• **Telegram**: 5k messages + 5k messages





COVID-19

https://pan.webis.de/clef24/pan24-web/oppositional-thinking-analysis.html

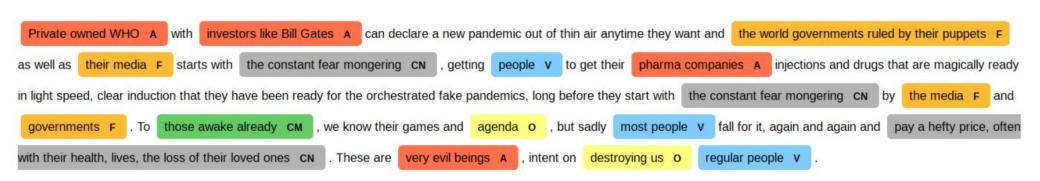


Figure 1: A Telegram text annotated with elements of oppositional narrative.

#### Shared task





Subtasks 4-6 on **memes** in (optional: also in ):

- Sexism identification
- Source intention: reported or direct
- Sexism categorization: ideological, stereotyping and dominance, objectification, sexual violence, misogyny

BECAUSE SANDWICHES WON'T MAKE THEMSELVES UP HERE.

http://nlp.uned.es/exist2024/