Chair of Software Engineering for Business Information Systems (sebis)
Faculty of Informatics
Technische Universität München
wwwmatthes.in.tum.de
### Introduction
- What is NLP?

### Expectations
- What you can expect.
- What we expect.

### Organization
- Examination procedure
- Schedule
- Course Structure
- Advisors
Natural Language Processing (NLP)

We will focus on:

- Texts (rather than speech)
- Methods and applications (rather than theory)
Natural Language Processing (NLP)

Three perspectives on NLP:

- Computational Linguistic
- Machine Learning
- Applications
Outline

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What you can expect.

- Overview over different areas and task within Natural Language Processing
- Insight into both, general methods and their application
- Overview over the current research within the field
- Deep dive into one topic of your choice
- Work with scientific literature and peer review process
What you can expect.

**Basics**
1. Information Extraction
2. Information Retrieval
3. Topic Modelling
4. Word Embedding
5. seq2seq models

**Large Language Models**
6. Transformer: Architecture
7. Transformer: Applications
8. Large Language Models: Architecture, Pre-training and Fine-tuning
9. Efficient Transformers
10. Ethnical & Social concerns, Privacy, and Limitations of Large Language Models

**Natural Language Generation and Evaluation**
11. Machine Translation (Multilingual NLP)
12. Text Summarization
13. Model Hallucination
14. Corpus-based Question Answering

**Conversational AI / Conversational Interfaces**
15. Task-based & Social Conversational Agents
16. Dialogue Management (Dialogue State Tracking & Policy)
17. Conversational Search Systems

**Knowledge Graph in NLP**
18. Graph Representations for NLP
19. Knowledge Graph-based Question Answering

**Natural Language Inference**
20. Natural Language Inference

**LegalTech**
21. Semantic Analysis of Legal Documents
22. LegalTech: Applications of Information Retrieval, Summarization and Simplification

**Differential Privacy in NLP**
23. Metric Differential Privacy in NLP
24. Privacy in Deep NLP

**Explainability in NLP**
25. Explainability in NLP
What we expect.

• Participation (not just attendance)

• Project / Demo (optional)

• Presentation (30min + 15min discussion)

• Seminar paper (8 pages) + Peer review

• Usage of LaTeX

• You don’t need an extensive knowledge in NLP or ML (but consider your previous knowledge when choosing a topic)
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Examination procedure

• Module Number (Master-Seminar): IN2107, IN4816

• 5 ECTS (1 ECTS equals to 30h, hence, 5*30h = 150h)

• **Regular attendance** (not more than one missed session)

• **Oral presentation:**
  30 min presentation + 15 min discussion => 45 min

• **Seminar paper:**
  8 pages, LaTeX

• **Peer reviews:**
  Reviews for two other seminar papers

• **Project / Demo (optional):**
  0.3 bonus grade
### Seminar milestones

<table>
<thead>
<tr>
<th>Seminar milestone</th>
<th>Dates</th>
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<tbody>
<tr>
<td>Preliminary Meeting</td>
<td>27.01.2023</td>
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<tr>
<td>Send us your CV and transcript</td>
<td>Until 16.02.2022</td>
</tr>
<tr>
<td>Matching</td>
<td>Until 23.02.2023</td>
</tr>
<tr>
<td>Send your top 4 Topic Preferences</td>
<td>Until 27.02.2023</td>
</tr>
<tr>
<td>Topic Assignment</td>
<td>Until 10.03.2023</td>
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<tr>
<td>14 Weekly sessions (each Friday)</td>
<td>21.04.2023 – 21.07.2023 (10am – 12 pm)</td>
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<tr>
<td>Submission seminar review</td>
<td>28.07.2023</td>
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<tr>
<td>Submission peer review</td>
<td>04.08.2023</td>
</tr>
<tr>
<td>Submission revised seminar paper</td>
<td>11.08.2023</td>
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Course Structure

• After Topic assignment
  • Get in contact with your advisor to schedule your meetings

• At least two meetings with your advisor.
  • Topic discussion
  • Presentation feedback

• If you have questions, please contact your assigned advisor.
Contact and Questions

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Are you Interested in applying?

1) Send your CV and transcript to Email: anum.afzal@tum.de
   Subject: NLP seminar 2023

2) Apply through the Matching system