Lukas Ellinger

PhD Candidate, Research Group Social Computing, Technical University of Munich
lukas.ellinger@tum.de | LinkedIn | Google Scholar

Research Statement

My research investigates how Large Language Models (LLMs) interpret and adapt to conversational context, particularly when user intent is underspecified or ambiguous. I study how LLMs model and maintain common ground, both as participants in a conversation and as external observers interpreting interactions between others. My work focuses on improving these representations to enable more reliable inference of message intent, robust handling of ambiguity, and mitigation of framing effects.

Research Interests

LLMs, Conversational AI, Common Ground, Context Modeling, Ambiguity, Framing Effects, Uncertainty and Factuality Evaluation

Education

Doctor of Natural Sciences (Dr. rer. nat.), Informatics 04/2025 – present
Research Group Social Computing, Technical University of Munich
Research Focus: Common Ground, Ambiguity, and Conversational Strategies in LLMs

Master of Science, Informatics 10/2021 – 11/2024
Technical University of Munich Grade: 1.4
Thesis: *Retrieval-Augmented Evaluation: Assessing the Factuality of Word Definitions Using Wikipedia* (Grade: 1.0)

Bachelor of Science, Informatics 10/2018 – 09/2021
University of Passau Grade: 1.6
Thesis: *Recursion in NoSQL Schema Languages*

Research Experience

PhD Candidate & Researcher 04/2025 – present
Research Group Social Computing, Technical University of Munich

- Research on adaptive dialogue systems and ambiguity in human-centered NLP.

Master's Thesis 04/2024 – 10/2024
Research Group Social Computing, Technical University of Munich

- Developed a multilingual retrieval-augmented evaluation pipeline for fact-checking word definitions, addressing performance gaps between English and German.
- Identified limitations in atomic fact splitting and retrieval quality, offering insights for improving fact-checking systems.

Student Research Assistant 07/2021 – 09/2021
Chair of Scalable Database Systems, University of Passau
DFG Project "NoSQL"

- Continued and refined Bachelor's thesis work to prepare results for publication.
- Improved experimental reproducibility, documentation, and dataset processing workflows.

Publications

Ellinger, L. & Groh, G. (2025). *It Depends: Resolving Referential Ambiguity in Minimal Contexts.* UncertaiNLP @ EMNLP 2025.

Ellinger, L., Anschütz, M., & Groh, G. (2025). *Simplifications Are Absolutists: How Simplified Language Reduces Word Sense Awareness.* RANLP 2025.

Industry Experience

Software Developer 04/2022 – 02/2025
Maven360 GmbH, Munich, Germany

- Developed and maintained a web application using React and FastAPI, with SQLAlchemy and Pydantic.
- Implemented a large-scale web scraping framework with Python, Scrapy, and Selenium.
- Integrated OpenAI models and spaCy pipelines for natural language processing and automated content analysis.
- Performed data processing and statistical analysis using Python, Pandas, and SQL.
- Automated the generation of presentation-ready reports (PowerPoint) to streamline communication of findings to stakeholders.
- Collaborated within a five-person Scrum team.

Skills

Machine Learning & NLP: PyTorch, Transformers, Hugging Face, spaCy, scikit-learn
Data & Backend: Python, FastAPI, SQLAlchemy, Pandas, SQL
Frontend: React, TypeScript, HTML, CSS
DevOps: Docker, Git, Linux
Tools: Jira, Confluence, LaTeX

Teaching

Supervisor, Bachelor and Master Theses
Supervisor, Student Teams in the NLP Lab Course (each semester)
Instructor, Introduction to Computer Science for Mathematics Students (Winter 2024/25)
Instructor, NLP Research Seminar (Winter 2024/25)

Languages

German (Native), English (Proficient - C1)