Roland Mühlenbernd

ML Researcher · NLP · Computational Linguistics

Berlin, Germany · muehlenbernd@web.de · +49 152 2667 4317 · muehlenbernd.net

ERC Seal of Excellence
€75K Research Grant (NAWA)
Invited Speaker, Stanford University
40+ peer-reviewed publications

RESEARCH PROFILE

Computational linguist and ML researcher with degrees in Computer Science, Media Studies, and Computational Linguistics (BSc–MSc–PhD) and 15+ years building machine learning models of language, communication, and social meaning. Currently developing novel evaluation frameworks and calibration metrics for LLMs on pragmatic tasks including politeness, precision, and register—bridging linguistic theory and applied NLP. Strong publication record spanning AI/CS, linguistics, and cognitive science, with expertise in statistical modeling, experimental design, and deep learning (PyTorch, Hugging Face). Seeking to bring linguistically-grounded ML research to industry applications in NLP and language technology.

PROFESSIONAL EXPERIENCE

Senior Researcher – LLM Evaluation & Pragmatics
Leibniz-Zentrum Allgemeine Sprachwissenschaft (ZAS) · Berlin — *Sep 2020 – Present*

- Developing novel calibration metrics (ESR, CDS) to evaluate LLM performance on social meaning tasks; testing GPT, Claude, and Gemini models across prompting conditions (submitted to CMCL 2026)
- Built probabilistic speaker models predicting politeness, precision, and self-presentation; outperformed all tested baseline ML algorithms with >90% accuracy
- Benchmarking LLMs against human pragmatic judgments to assess model calibration on fine-grained social evaluations (follow-up study in preparation for ACL/EMNLP)
- Applying transformer-based NLP pipelines (Hugging Face) and Python/PyTorch for model evaluation and data analysis

Principal Investigator – EvoSAL Project
Nicolaus Copernicus University · Toruń, Poland — *Dec 2019 – Nov 2021*

- Led €75,000 NAWA-funded project on semantic ambiguity; developed iterated learning models contrasting computational predictions with human data, outperforming theoretical predictions (Synthese, 2021)
- Designed and managed full research pipeline: experimental paradigm, data collection (LabVanced), statistical analysis (Python/R), publication

Postdoctoral Researcher – Multi-Agent RL & Cooperation
Università Ca' Foscari Venezia · Venice, Italy — *Sep 2017 – Nov 2019*

- Designed reinforcement learning models combining dynamic cognitive frames to predict cooperative behavior in multi-agent interactions
- Introduced a new RL learning paradigm that outperformed existing models across 5 key metrics (Experimental Economics, 2019)

Postdoctoral Researcher – Computational Sociolinguistics
University of Tübingen · Germany — *Aug 2013 – Aug 2017*

- Pioneered computational modeling in sociolinguistics using agent-based simulation and network analysis
- Visiting researcher at UC Irvine, Ohio State, and University of Toulouse; invited speaker at Stanford (2016)

SELECTED NLP / AI PUBLICATIONS

- Mühlenbernd, R. (2026, submitted). Social Meaning in Large Language Models: Structure, Magnitude, and Pragmatic Prompting. CMCL 2026.
- Mühlenbernd, R. & Baumann, A. (2025). Population-level models of evolutionary pragmatics. In: Geurts & Moore (eds.), Evolutionary Pragmatics, Oxford Studies in the Evolution of Language 21. Oxford University Press.

- LiCalzi, M. & Mühlenbernd, R. (2022). Feature-weighted categorized play across symmetric games. Experimental Economics, 25, 1052–1078.
- Mühlenbernd, R. (2019). The change of signaling conventions in social networks. AI & Society, 34, 721–734.
- Full list of 40+ publications: muehlenbernd.net/publications

TECHNICAL SKILLS & EDUCATION

ML & Deep Learning

PyTorch · TensorFlow · Hugging Face Transformers · scikit-learn · fine-tuning · LLM evaluation · prompt engineering

NLP

Text classification · semantic analysis · LLM calibration · pragmatic modeling · corpus methods · spaCy · NLTK

Programming & Tools

Python (expert) · R · Julia · C++ · Git · JupyterLab · VS Code · Google Colab · Pandas · NumPy · Matplotlib

Languages

German (native) · English (fluent) · Italian (intermediate)

Education

PhD, Theoretical & Computational Linguistics
University of Tübingen, 2009–2013

MSc, Interdisciplinary Media Studies
incl. Computerlinguistik, Formale Methoden, Bildverarbeitung
University of Bielefeld, 2006–2009

BSc, Computer Science
University of Paderborn, 2004–2006
★ *Embedded University Award 2007, Embedded World Nuremberg*

Recent Certifications (2024–2026)

Google Cloud ML – 86.67% (EICI, 2025)
LLM Engineering: AI, LLMs & Agents (Udemy, 2025)
Deep Learning & Neural Networks in Python (Udemy, 2025)
NLP with Classification and Vector Spaces (DeepLearning.AI, 2026)