

Tom Zehle

PhD Researcher, Machine Learning

University of Freiburg · Research group of Frank Hutter

Freiburg, Germany · tom.zehle@tue.ellis.eu · [GitHub](#) · [Google Scholar](#) · [LinkedIn](#) · [YouTube](#)

PhD researcher working on prompt optimization and multi-agent system optimization. Research vision: automated design and optimization of multi-agent systems (“AutoML for Agents”). Task lead in the EU ELLIOT project (WP3). Previously data scientist at Airbus; M.Sc. in Statistics and Data Science from LMU Munich. First author of four public papers (one sole-authored); maintainer of the open-source framework promptolution.

EXPERIENCE

PhD Researcher · University of Freiburg

Oct 2025 – present · Freiburg, Germany

- Research on prompt optimization and multi-agent system optimization.
- Task lead in the EU ELLIOT project (WP3, Task 3.3: fine-tuning of MGFMs).
- Author of five publications to date (four first-author, one sole-authored); see Publications below.
- Supervising B.Sc./M.Sc. students and a student assistant; see Supervision below.
- Reviewer for NeurIPS 2026 and Nature (2025).

Data Scientist · Airbus

2023 – 2025 · Munich, Germany

- Engineered a similarity-search model for the Eurofighter support center; now in production, used by system engineers to accelerate incident handling.
- Built fine-tuning scripts, a comprehensive evaluation framework, and production backend services and APIs for model deployment.
- Developed a prompt-optimization proof of concept and an AI-powered export-classification pipeline for sensitive documents.

Dual Student, Data Science · Airbus

2020 – 2023 · Munich / Ingolstadt / Getafe

- Practical phases across computer vision, traditional ML, and NLP.
- Built a transformer-tabular hybrid model to predict flight arrival times.
- Developed a computer-vision algorithm for the ExoMars rover project and a scene-change-detection system for production safety.

EDUCATION

M.Sc. Statistics and Data Science · LMU Munich

2023 – 2025

Machine Learning track. Grade: 1.1.

Thesis (1.0): “Understanding Temporal Structure in Text – A Study of Positional Encodings in LLMs”; published as the positional-encodings calibration paper at Findings of EACL 2026.

B.Sc. Business Informatics (Data Science Specialization) · DHBW Ravensburg

2020 – 2023

Dual study with Airbus. Grade: 1.4.

Thesis (1.0): fine-tuning transformers for similarity search across aircraft documentation and incident reports.

PUBLICATIONS

CANTANTE: Optimizing Agentic Systems via Contrastive Credit Attribution

Tom Zehle [arXiv preprint \(2026\)](#) [\[PDF\]](#) [\[code\]](#)

MO-CAPO: Multi-Objective Cost-Aware Prompt Optimization

Jan Büssing, Moritz Schlager, Timo Heiß, Tom Zehle, Matthias Feurer [arXiv preprint \(2026\)](#) [\[PDF\]](#)

Can Calibration of Positional Encodings Enhance Long Context Utilization?

Tom Zehle, Matthias Aßenmacher [Findings of EACL 2026](#) [\[PDF\]](#) [\[code\]](#)

promptolution: A Unified, Modular Framework for Prompt Optimization

Tom Zehle, Timo Heiß, Moritz Schlager, Matthias Aßenmacher, Matthias Feurer
[EACL 2026 \(System Demonstrations\)](#) [\[PDF\]](#) [\[code\]](#)

CAPO: Cost-Aware Prompt Optimization

Tom Zehle, Moritz Schlager, Timo Heiß, Matthias Feurer [AutoML 2025](#) [\[PDF\]](#) [\[code\]](#)

SUPERVISION

- B.Sc./M.Sc. student research projects on multi-agent system optimization (two students).
- A student assistant supporting the research group.

AWARDS & MEDIA

Award	Airbus “Fly Your Ideas” Competition 2024, with L. Backhaus and N. Lethaus [link]
Podcast	“How does an Airbus data scientist keep up to date?”, Industrial AI Podcast, May 2025 [listen]
Videos	Paper walkthroughs and demos, e.g. the promptolution EACL 2026 demonstration [channel]

SKILLS

ML research	Prompt optimization, multi-agent systems, AutoML, LLM evaluation
Engineering	Python, PyTorch, open-source development (promptolution maintainer), agentic coding workflows
Statistics	Experimental design, multi-objective optimization
Languages	German (native), English (fluent), Russian (intermediate), Spanish (basic)