# Gioia Zheng

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## RESEARCH INTERESTS

Machine learning, information retrieval and natural language processing, with an interest in evaluating learning systems through controlled experiments, interpretable diagnostics and reproducible software.

## EDUCATION

**TU Darmstadt** Winter 2026

M.Sc. Computer Science

IAS Robot Learning project: Learning Amphibious Legged Locomotion (ongoing). Prof. Jan Peters.

**University of Eastern Finland** Aug – Sep 2026

Visiting student · Artificial Intelligence for Computer Games · 5 ECTS
Credits recognised at TU Darmstadt.

**Sapienza University of Rome** Winter 2022

B.Sc. Applied Computer Science and Artificial Intelligence

## RESEARCH AND PROFESSIONAL EXPERIENCE

### Undergraduate Thesis Research

Sapienza University of Rome · Supervisor: Prof. Marco Raoul Marini

- Studying retrieval and reranking across datasets, focusing on evidence coverage and answer quality.
- Conducted controlled comparisons and query-level error analysis; developed reproducible evaluation workflows.

### NLP Algorithm Engineer Intern

Feb – May 2026

Microsoft · Remote

- Implemented retrieval, reranking and question-answering components in Python; developed evaluation and result-validation workflows.

### Web Development Intern

Mar – Jun 2026

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- Maintained production web systems and automated internal workflows in a client-facing environment.

## SELECTED PROJECTS

**MS MARCO Generative QA** · GitHub
Modular retrieval and generation pipeline with statistical comparisons, grounding checks and reproducible experiment records.

**RAG Observatory** · GitHub
Trace-based toolkit for inspecting retrieved evidence, generated answers and failure patterns in retrieval-augmented systems.

**Q-learning Exploitability** · GitHub
Tabular reinforcement learning with exact best-response evaluation, opponent mixtures and symmetry-aware representations.

## OPEN SOURCE AND SKILLS

Contributions to MTEB, Pyserini and Open RAG Eval, including evaluation correctness, dataset maintenance and reproducibility checks.

**Programming and tools** Python, SQL, Git, Linux, Docker, pytest, GitHub Actions.
**Machine learning** PyTorch, Transformers, scikit-learn; retrieval, NLP and reinforcement-learning evaluation.
**Languages** Chinese (native), Italian (bilingual), English (professional), German (beginner).