Kevin Bretz

MSc student in Computer Science & AI

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Summary

MSc student in Computer Science & AI at Leiden University, graduating January 2027. My experience spans computer vision for cancer diagnostics, human–robot interaction, and audio & signal processing, and I'm a teaching assistant for several courses in the programme. I'm most drawn to real-time interactive systems, reinforcement learning, and AI that collaborates with people in creative work rather than replacing them. I'm looking for PhD and research positions in that direction.

Education

MSc **Leiden University**, Computer Science — Artificial Intelligence — Leiden, The Netherlands — Feb 2025 – Jan 2027

- Specialisation in Artificial Intelligence.
- Coursework across: reinforcement learning, deep learning, audio processing, robotics, sports data science, game AI, evolutionary algorithms, AI & art, recommender systems, AutoML, and multi-criteria optimization and decision analysis.
- Thesis (currently in progress): Working towards a real-time, interactive jamming agent

BSc **Cologne University of Applied Sciences (TH Köln)**, Media Technology — Cologne, Germany — 2019 – 2023

- Specialisation in image analysis & pattern recognition, audio/visual media production, and computer graphics & animation.
- Thesis (at KLIPPEL GmbH): "Automated measurement of the directivity of loudspeakers and microphones under non-ideal conditions."

Experience

EKFZ — Kather Lab, Dresden University Medical Center, Student Assistant / Data Scientist — Dresden, Germany
AI-driven cancer research. — Sept 2023 – Aug 2024 — 1 year

- Trained and evaluated computer-vision models to predict molecular biomarkers from microscopic tumour-tissue scans, using datasets from collaborating universities and hospitals worldwide.
- Ran preprocessing and model training on HPC clusters, with regular cross-validation and result visualisation.
- Contributed to work published in a peer-reviewed paper (see Publications).

KLIPPEL GmbH, Intern & Bachelor Thesis Student — Dresden, Germany
Loudspeaker & acoustic measurement technology. — Oct 2022 – June 2023 — 9 months

- Produced educational video material on loudspeaker distortion for universities.
- Bachelor thesis: automated measurement of loudspeaker and microphone directivity outside an anechoic chamber, using a robotic polar scanner, impulse-response windowing and acoustic absorbers to simulate free-field conditions, benchmarked against measurements taken in an anechoic chamber as well as via near-field acoustic holography (IEC 60268).

Cologne Cobots Lab, Student Assistant — Cologne, Germany
Human–robot interaction research lab. — May 2021 – Aug 2022 — 1 year 4 months

- Helped develop a customer-service robot for train stations, working on the NLP and on creating, animating, and lip-syncing its avatars.
- Ran and evaluated user studies.

Teaching

Leiden University, Teaching Assistant — Leiden, The Netherlands
Courses in the Computer Science & AI programme. — Feb 2026 – Jan 2027

- Robotics (Feb – June 2026).
- AI & Art, Audio Processing & Indexing, and Evolutionary Algorithms (Sept 2026 – Jan 2027).

Publications

Prediction of homologous recombination deficiency from routine histology with attention-based multiple instance learning in nine different tumor types — Jan 2024
Chiara M. L. Loeffler, Omar S. M. El Nahhas, Hannah S. Muti, …, *Kevin Bretz*, …, Jakob Nikolas Kather
doi.org/10.1186/s12915-024-02022-9 (BMC Biology)

Skills

Machine learning: PyTorch, deep learning, reinforcement learning, computer vision, NLP, generative models (VAEs & diffusion), HPC / cluster computing

Programming: Python (primary); also Java, C#, JavaScript

Audio & creative tools: FL Studio, Unity, Blender

Certificates

Artificial Intelligence & Creativity, Una Europa Summer School — June 2026
University College Dublin — An interdisciplinary programme for doctoral researchers I attended during my master's.

Languages

English: Native

German: Native

Spanish: Intermediate (B1)

Interests

Audio & music production, building audio equipment, computer animation & game development, sports data science