# EMRE BERAY BOZTEPE

## MACHINE LEARNING ENGINEER | AI ENGINEER | GENERATIVE MODELS

Görlitz, Germany | +49 170 667 3549 | berayboztepe@outlook.com

LinkedIn | GitHub | Portfolio | Open to relocation across Germany | Available Jan 2027

### PROFESSIONAL SUMMARY

Data Science M.Sc. with applied machine learning research experience and a software engineering background. Implemented Conditional Flow Matching from scratch, adapted a diffusion-model implementation for microscopy data and built reusable PyTorch workflows for training, evaluation and GPU/HPC experimentation.

### TECHNICAL SKILLS

**ML & deep learning:** Python, PyTorch, TensorFlow, scikit-learn, CNNs, GANs, diffusion models, flow matching, Transformers, PyTorch Lightning

**Training & experimentation:** image-to-image learning, residual learning, data augmentation, benchmarking, model evaluation, Weights & Biases

**Engineering & infrastructure:** GPU/HPC, Git, Linux, Docker, pandas, NumPy, FastAPI, Flask, PostgreSQL, REST APIs

### PROFESSIONAL EXPERIENCE

**Research Assistant (Scultetus Early Career Fellow)** | CASUS / HZDR, Görlitz, Germany

Mar 2026 - Present | Fixed-term contract through Dec 2026

- Implemented Conditional Flow Matching (CFM) and its training/evaluation workflows from scratch; adapted an existing CVDM diffusion implementation for the VIRVS microscopy dataset.
- Built reusable PyTorch experiments evaluating residual and non-residual variants against U-Net, UNeXt2 and pix2pix benchmarks; investigated DeBCR and adversarial flow approaches.
- Automated preprocessing and quantitative evaluation across multiple datasets, including synthetic, organoid and 2D/3D imaging, using image- and cell-level metrics.
- Ran dozens of GPU/HPC experiments, optimized memory usage and tracked results in Weights & Biases; exploring noise-robust CFM after metric-specific but not consistent overall gains.

**Game Developer** | NARCADE, Istanbul, Turkey

Jul 2022 - Oct 2023

- Developed and maintained 10+ mobile-game features in Unity/C#, resolving production issues and improving gameplay performance.
- Implemented advertising and monetization components in an Agile workflow using Git, Jira and code reviews.

### SELECTED PROJECTS

**Small Language Models for Computation** | Transformers, curriculum learning - Built GPT-style micro-models for arithmetic/sequence reasoning; achieved 99% accuracy on held-out evaluations in M.Sc. thesis.

**Ryanair Labs Take-Off Weight Prediction** | Python, scikit-learn, XGBoost - Developed an airline take-off weight regression workflow with fuel/payload features, preprocessing comparisons and RMSE-based model selection.

**Explainable Bilingual Fake-Speech Recognition** | ensemble learning, XAI - Built bilingual deep learning and interpretable voting-ensemble pipelines; first-author journal paper (2025).

**AVESA: Multimodal AI Research** | TensorFlow, ASR, NLP/NER, association rules - Led the research group, coordinated contributions and integrated the multimodal AI pipeline; first-author journal paper (2022).

### EDUCATION

**M.Sc. Data Science, University of Wrocław, Poland** | Oct 2023 - Sep 2025 | GPA: 4.58/5.00 | Thesis: symbolic reasoning with small language models

**B.Sc. Computer Engineering, Çanakkale Onsekiz Mart University, Turkey** | Sep 2018 - Jun 2022 | GPA: 3.17/4.00

**Erasmus+ Exchange, Lublin University of Technology, Poland** | Computer Science | Feb - Jun 2021

### ADDITIONAL INFORMATION

**Research output:** 3 AI/ML publications (2 first-author journal articles); research presenter at ISAS2022.

**Languages:** Turkish (native), English (C1), German (A1), Polish (A1).