Anar Amirli

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Education

Universität des Saarlandes — **Saarbrücken, Germany**
M.Sc. Computer Science — *Oct 2019 – Aug 2025*

- DAAD (Deutscher Akademischer Austauschdienst) Graduate Scholarship
- Thesis**:** "*Beyond Heatmaps: A Visual Concept-Based Explainable Model via Graph Attention Networks*" — Seminar grade: 1.0

Baku Engineering University — **Baku, Azerbaijan**
B.Eng. Computer Engineering — *Sep 2014 – Jun 2019*

- Graduated with Honors | Government Scholarship for Academic Excellence

Selected Work Experience

Research Assistant & Thesis Student — **Saarbrücken, Germany**
DFKI GmbH (German Research Center for AI) — *Mar 2023 – Aug 2025*

- Developed an **ante-hoc explainable AI model** with Graph Neural Networks (PyTorch) for **skin cancer diagnosis**, achieving **~3%** higher accuracy than baseline CBMs while providing clinical interpretability through **visual, concept-based explanations**.
- Delivered a **full pipeline** with dashboards, enabling clinician-ready **interpretability tools** for dermatological image classification.

Research Assistant — **Saarbrücken, Germany**
DFKI GmbH (German Research Center for AI) — *Nov 2021 – Sep 2022*

- Built and deployed **end-to-end ML solutions** (TensorFlow, pytest, Docker, AWS) for **anomaly and failure detection** in manufacturing lines at Schott AG, improving anomaly localization accuracy with **post-hoc XAI methods** by **13%**.
- Fine-tuned LLMs (T5/BART) to auto-draft incident reports from sensor data, assisting early incident assessment.

Research Assistant — **[remote]**
TESLAB, NTU Singapore — *Feb 2021 – May 2022*

- Built **multimodal-to-image translation** pipeline (U-Net-style, GANs) for topology optimisation of 2D/3D structures, achieving **91–99%** accuracy, enabling near real-time optimisation.
- Deployed **a full pipeline** (Docker, Flask/FastAPI) to replace heavy simulation models.

Machine Learning Intern — **Baku, Azerbaijan**
ATL Tech — *Jan 2019 – Jun 2019*

- Contributed to the development of a **speech recognition system** (TensorFlow, SciPy) for aviation training simulation.
- Performed **feature engineering** and preprocessing of **unstructured audio data** (spectrograms, MFCCs), training LSTM and Hidden Markov Models on 30K+ cockpit command samples.

Sumer Internship — **Ankara, Turkey**
ImageLab, Middle East Technical University — *Jun 2018 – Sep 2018*

- Built a ML pipeline for ball-position estimation in football, to assist tracking camera accuracy during occlusion. Implemented end-to-end data preparation and feature engineering.

Skills

- **Machine Learning & AI:** CNNs, ViTs, VAEs, GANs, GNNs, CLIP, LLMs
- **Programming:** Python (PyTorch, TensorFlow, Hugging Face), C++, SQL, Spark
- **DevOps & Tools:** Docker, AWS, MLflow, FastAPI, Flask, CI/CD
- **Languages:** Azerbaijani (native), English (C1), Turkish (C1), German (B1)

Selected Publications

Unsupervised multi-sensor anomaly localization with explainable AI. Ameli, M., Pfanschilling, V., Amirli, A., Maaß, W., Kersting, K. Artificial Intelligence Applications and Innovations. Springer, 2022. DOI: 10.1007/978-3-031-08333-4_41