ANAR AMIRLI

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SUMMARY

Experience in research and development of data science, machine learning, vision-language models and explainable AI

EMPLOYMENT

Research Assistant & Thesis (Machine Learning) — Saarbrücken, Germany
DFKI GmbH — *Mar 2023 – Aug 2025*

- Designed and developed a concept-based, **self-explainable vision model for skin cancer diagnosis**, surpassing baseline models (e.g., CBMs) by around 3% in performance.
- Leveraged **vision-language models** (e.g., CLIP, MedCLIP) to benchmark explainability on medical **imaging datasets**.
- Conducted **large-scale statistical analyses** to evaluate the consistency of explanations from self-explainable models.

Working Student (Data Science) — Saarbrücken, Germany
DFKI GmbH — *Nov 2021 – Sep 2022*

- Developed and deployed a **self-supervised anomaly detection system** for manufacturing lines at Schott AG.
- Enhanced anomaly detection and localization accuracy with post-hoc explainability methods by **13%**.
- Fine-tuned **transformer-based LLMs** (e.g., T5, BART) to **generate incident reports** from anomalous sensor data for early incident assessment.

Research Assistant (Computer Vision) — *Singapore* (remote)
TESLAB, Nanyang Technological University — *Feb 2021 – May 2022*

- Developed **multimodal-to-image translation** framework with Generative AI models for topology optimisation of 2D/3D structures, achieving **91–99%** accuracy and enabling near real-time optimization.
- Conducted a comprehensive literature review on generative models, including diffusion models, VAEs, and GANs.

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

- Assisted in developing a **speech recognition system** used in flight training simulations at an aviation academy.
- Performed **feature engineering** for unstructured audio data (e.g., spectrograms, MFCCs) and trained **sequence models** (e.g., LSTMs, HMMs) on cockpit command samples.

Data Science & Machine Learning Intern — Ankara, Turkey
ImageLab, Middle East Technical University — *Jun 2018 – Sep 2018*

- Designed and developed an ML model for ball **position estimation in football**, helping tracking cameras handle occlusions.
- Processed and analysed **large-scale data** of league games over multiple seasons, including **data cleaning, feature engineering,** and **visualization**.

Software Developer — Baku, Azerbaijan
NSPSOLUTIONS LLC — *Sep 2017 – Jun 2018*

- Developed multi-feature Android apps with backend integration (HTTP APIs to Java interfaces) and contributed to the mobile app development for Opal Transfer LTD.

EDUCATION

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

- Grade: 2.4 | Deutscher Akademischer Austauschdienst (DAAD) Full Graduate Scholarship

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

- Grade: 1.3 | Graduated with Honors | Government Scholarship for Academic Excellence

CERTIFICATES

High Level Computer Vision by MPI; **Optimization for Machine Learning** by CISPA; **Predictive Analytics with R** by DFKI; **Developing Machine Learning Solutions** by AWS; **Generative AI with Large Language Models** by AWS

SKILLS

- **Programming**: Python (PyTorch, TensorFlow, SciPy, Scikit-learn, OpenCV, Hugging Face), C++ (dlib), Java, MATLAB, R
- **Data**: SQL, Spark, MySQL, MongoDB
- **MLOps & Tools:** MLflow, Docker, CI/CD, FastAPI, Flask, AWS, Airflow
- **Languages:** Azerbaijani (native), English (C1), Turkish (C1), German (B1)
- **Others:** GPU-Accelerated Programming, Clean and Secure Coding, Linux

PUBLICATIONS (Full Scholar Link)

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

HOBBIES

Reading in social theory (Structuralism, Biopolitics, Feminism); Doing pottery and ceramics; Playing tar, electric guitar, and mixing vinyl records; Cooking (used to work in a family restaurant)