# Faidra Anastasia Patsatzi

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## EDUCATION AND ACHIEVEMENTS

**10/2023–**
*expected*
*03/2026*

**Technical University of Munich (TUM)**
M.Sc. Electrical Engineering and Information Technology | Current grade: 1.1 | GPA: 3.9 (top 2%)
<u>Relevant coursework</u>: Fundamentals of Foundation Models, Deep Learning for Inverse Problems, Seminar on LLM Finetuning, Computer Vision, Approximate Dynamic Programming and Reinforcement Learning

**10/2020–**
**07/2023**

**Technical University of Munich (TUM)**
B.Sc. Electrical Engineering and Information Technology
B.Sc. German Grade: 1.3 | GPA: 3.8
Bachelor thesis: "Randomized Smoothing as an Adversarial Defense Mechanism for Inverse Problems", supervised by Prof. Reinhard Heckel, Professorship of Machine Learning, TUM, graded 1.0 (GPA: 4.0)
**Awarded a merit-based full scholarship for the B.Sc. & consecutive M.Sc. by the DAAD**

**09/2014–**
**06/2020**

**Deutsche Schule Athen (German School of Athens), Greece**
EP (Abitur): 1.0, Valedictorian

## WORK EXPERIENCE

**09/2024–**
**present**

**GenAI Engineer Working Student, *BMW Group Research and Innovation Center***
· Developing a PoC for agentic RAG in Python using LangGraph: a custom approach for integrating ontology graphs to guide SQL agents in a multi-agent system (text-to-SQL), benchmarking it against a Graph-RAG (text-to-SPARQL)

**06/2023–**
**08/2024**

**Machine Learning Engineer Working Student, *Siemens AG***
· Contribution to an end-to-end business news article processing pipeline ingesting 10,000+ articles daily, consisting of a data transformation, translation, and NER component in Python, automated generation of synthetic NER test data using GPT-4, evaluation of BERT NER models
· Programmed a chat-your-data app (Java) using LLM chain techniques and prompt engineering, reaching 100+ users
· Development of an agentic RAG (text-to-SQL) to interact with financial data in Snowflake, using LangChain/LangGraph

**11/2022–**
**05/2023**

**Software Engineer/Analytics Intern, *metafinanz Informationssysteme (Allianz Group)***
· Development of a near real-time product analytics solution using application logs streamed via Azure services
· Training, fine-tuning, and deployment of a machine learning model for a text classification task (SVM with TF-IDF) and development of a REST API using FastAPI

**08/2021–**
**10/2022**

**Student Assistant, *Technical University of Munich (TUM)***
Tutor at the preparatory mathematics course, in "Programming in C" (LDV), and in "System Theory" (MSV)

## PROJECTS AND PROGRAMMES

**11/2022–**
**present**

**Board Member at *she.codes by T.E.C.***             **Project management**
Leading a student volunteering club active at multiple universities in Germany (TUM, KIT, Ulm) providing free coding workshops in Python to girls aged 11 to 14.

**10/2023**

**QuantCo GAC Scholarship**
**WomenHackAI Hackathon** 3rd place | implemented an OCR solution for PCB component IDs using deep learning (OCR engine) and super-resolution (ESRGAN) to enhance image resolution as a preprocessing step.

**10/2022–**
**10/2023**

**Co-Founder of *neuroTUM***             **Deep Learning, PyTorch**
Student research group focusing on neuroengineering, BCI (Brain-Computer Interface)
Deep Learning team; performing multi-class classification using networks such as CNN-LSTM, transformers and ViTs, on data sampled from EEG brain signals. Participated at the **NeuroTechX Global Hackathon 2023**.

**02/2023**

**U-Net for Brain MRI Segmentation**             **Deep Learning, PyTorch**
Implemented and trained a U-Net architecture with a custom weighted binary cross entropy loss on a dataset containing brain MRI scans and tumor diagnoses in segmentation masks, graded 1.0.

**11/2022**

**Siemens Mentoring Programme, Cohort 2022-2023**
Participation as a mentee and at the Siemens RIE Hackathon and Siemens RIE Conference in March 2023
**Siemens RIE Hackathon**: development of a road risk visualization interactive web app using Python, geopandas, and dash for Munich based on historic accident data for location, severity, and frequency.

## SKILLS & TECHNICAL KNOWLEDGE

**Programming Languages:** Python, C++, SQL, basic HTML and CSS
**Technologies:** PyTorch, transformers, langchain, spacy, scikit-learn, Pandas, Numpy, Matplotlib, Git, Docker, Streamlit, pyomo, Jupyter Notebooks, PowerBI, Azure Cloud Services, AzureML, Azure OpenAI, Azure Cognitive Search, Redis
**Languages:** German (C2), English (C2), Greek
**Soft Skills:** Debate (attended 14 international MUN conferences), Organization of a MUN conference (DSAMUN 2019)