

# TAREQ ABU EL KOMBOZ

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## EDUCATION

10/2022 - 03/2026 expected	<b>Master of Science: Computer Science</b> <ul style="list-style-type: none"><li>• Current Grade: 1.3 (Scale: 1.0 = Best)   Completed 114/120 ECTS</li><li>• Semester Abroad at the University of Adelaide (Baden-Württemberg Scholarship Recipient)</li><li>• Master Thesis "Deep learning for anomaly detection in vehicle control units in trace files" (Supervisor Prof. Dr. Mathias Niepert)</li></ul>	University of Stuttgart & University of Adelaide
10/2018 - 09/2022	<b>Bachelor of Science: Computer Science</b> <ul style="list-style-type: none"><li>• Final Grade: 1.9 (Scale: 1.0 = Best)   Completed 180/180 ECTS</li><li>• Bachelor Thesis "Parameter-Dependent Self-Learning Optimization" (Supervisor Prof. Dr. Dirk Pflüger)</li></ul>	University of Stuttgart

## RESEARCH EXPERIENCE

09/2024 - 02/2025	<b>Master Thesis: Deep learning for anomaly detection in vehicle control units in trace files</b> <ul style="list-style-type: none"><li>• Benchmarked LogLLM vs. LogBERT on proprietary Porsche and open-source data (BGL, ThunderBird)</li><li>• Demonstrated that larger models (8B vs 1B) significantly increase F1-scores (e.g. BGL 0.419 to 0.912)</li></ul>	University of Stuttgart & Porsche AG
10/2023 - 03/2024	<b>AI Laboratory Course: Credit Card Fraud Detection</b> <ul style="list-style-type: none"><li>• Compared DL methods vs. traditional Anomaly Detection on tabular data with 550k+ transactions</li><li>• Achieved sota macro-average F1-score of 93% using OC-NN, outperforming kNN baselines (89%)</li></ul>	University of Stuttgart
10/2023 - 03/2024	<b>Study Project: Automated Clustering of Small Molecules</b> <ul style="list-style-type: none"><li>• Improved performance by 15% compared to university's baseline using UMAP and MDAnalysis</li></ul>	University of Stuttgart
04/2022 - 09/2022	<b>Bachelor Thesis: Parameter-Dependent Self-Learning Optimization</b> <ul style="list-style-type: none"><li>• Developed a Learn-to-Optimize framework using RL (REINFORCE, PPO) to solve black-box problems</li><li>• Demonstrated agent generalization to unseen parameter configurations in up to 10 dimensions</li></ul>	University of Stuttgart

## WORK EXPERIENCE

10/2025 - today	<b>Working Student (AI/LLM)</b> <ul style="list-style-type: none"><li>• Automated test case generation from hardware requirement specifications using LLMs and AWS</li></ul>	Porsche AG
03/2024 - 08/2024	<b>Data Science Research Intern</b> <ul style="list-style-type: none"><li>• Analyzed correlation of customer complaints and ECU faults in vehicles via Association Rule Discovery</li></ul>	Porsche AG
10/2019 - 09/2020	<b>Teaching Assistant</b> <ul style="list-style-type: none"><li>• Taught weekly tutorials in "Data Structures and Algorithms" and "Theoretical CS" for 60+ students</li></ul>	University of Stuttgart

## PROJECTS

10/2023 - 03/2024	<b>Blog Post: Mastering the Game of Go</b> <ul style="list-style-type: none"><li>• Published technical breakdown of AlphaGo/AlphaZero concepts (MCTS, Deep RL) on GitHub Pages</li></ul>	University of Stuttgart
04/2023 - 03/2024	<b>School For Talents</b> <ul style="list-style-type: none"><li>• Organized scientific workshops and keynotes about AI for 100+ students</li></ul>	German Research Foundation
10/2023 - 11/2023	<b>AI Incubator Batch #3 (Winner)</b> <ul style="list-style-type: none"><li>• Won "Business Model Award" for "VectisFinance", an AI-Fintech startup prototype</li></ul>	Cyber Valley & Carl-Zeiss-Stiftung

## EXTRACURRICULAR ACTIVITIES

10/2023 - 09/2025	<b>AI Software Academy (AISA)</b> <ul style="list-style-type: none"><li>• Certificate of Advanced Studies (18 ECTS) focusing on the intersection of AI and Software Engineering</li></ul>	University of Stuttgart
11/2023 - 11/2024	<b>AI Career Kickstart Program</b> <ul style="list-style-type: none"><li>• Training on interdisciplinary topics like "ML Operations", "AI Regulations" and "ML Organizational Roles"</li></ul>	AppliedAI Institute of Europe

## SKILLS & EXPERTISE

- **Reinforcement Learning:** PPO, SAC, DQN, MCTS, DynaQ+, Policy Gradients, Bandits, (PO)MDPs
- **Deep Learning Architectures:** Transformers (LLMs), Diffusion Models, GANs, Autoencoders, CNNs, RNNs, GNNs
- **Core Stack:** Python, PyTorch, TensorFlow, JAX, CUDA, Hugging Face, Scikit-learn, Pandas, NumPy
- **Languages:** German (Native), English (C1/Fluent)