Ali Salaheldin Ali Ahmed – Curriculum Vitae

Location	Saarbrücken, Germany	**Phone**	+49 1575-300-1452
Languages	German (*B2*)	**Email**	rated.ali.7@gmail.com
	English (*C1*)	**Online**	GitHub
	Arabic (*Native*)		LinkedIn

Research Profile

An ambitious researcher holding a Masters degree in Computer Science from Saarland University with knowledge in machine learning, algorithms and data structures, logic, and neurosymbolic AI. Master thesis research at the "Dependable Systems and Software" Chair investigated certified training efficiency for randomized smoothing. My background combines optimization work, machine learning teaching experience, and production software engineering for AI, cloud, and dependable software systems.

Education

2022–2026 MS Computer Science, Saarland University, Saarbrücken
CGPA: **1.8**.

2014–2020 B.Sc. (Hons) Electrical and Electronic Engineering, University of Khartoum, Khartoum
Major: *Electronic Systems Software Engineering*
CGPA: **8.78**/10.0 (top 5%).

Academic Background

Machine Learning and AI. Graduate work in *Elements of Machine Learning* and *Machine Learning* strengthened my ability to connect statistical learning theory, model evaluation, and implementation details. Seminar work on language models at the intersection of cognitive science and software engineering gives my AI interests a broader view of how models reason, fail, and interact with software-development workflows.

Logic, Algorithms, and Reasoning. Coursework in algorithms, data structures, and computational logic, together with seminar work in *Hybrid Learning and Reasoning*, supports my interest in AI systems that combine empirical learning with formal structure, robustness, and dependable behavior.

Research Output

2026 "*Rethinking Certified Training Efficiency: A Benchmarking Framework and Empirical Investigation for Randomized Smoothing*"
M.Sc. Thesis, Dependable Systems and Software Chair, Saarland University
Advisors: Dr. Hanwei Zhang and Prof. Holger Hermanns
Focus: certified robustness, randomized smoothing, benchmarking, empirical ML evaluation.

2021 "*A Comparison of Selection Hyper-Heuristic Approaches on the Conference Scheduling Optimization Problem.*"
International Conference on Computer, Control, Electrical, and Electronics Engineering *(ICCCEEE20)*. DOI: `10.1109/ICCCEEE49695.2021.9429603`

2020 "*The Conference Scheduling Optimization Problem*"
B.Sc. Thesis, Department of Electrical and Electronic Engineering, University of Khartoum
Advisor: Dr. Ahmed Kheiri
Focus: combinatorial optimization, heuristic search, constraint-aware schedule generation.

Research, Teaching, and Professional Experience

Jul 2023 – Present August Wilhelm-Scheer Institut gGmbH, Saarbrücken
Junior Researcher (Werkstudent)

Designed and maintained research-facing software infrastructure for AI and cloud projects, translating open-ended technical requirements into reliable internal services.

- Developed an API management and mocking service with an agentic LLM-based development assistant.
- Built a multi-provider cloud cost analysis service with Odoo integration for infrastructure visibility.
- Deployed and maintained a federated learning server instance, gaining practical experience with distributed ML infrastructure.

Technologies: Azure, LangGraph, Angular, TypeScript, ASP.NET, C#, Python.

Jun 2023 – Mar 2024 Saarland University, Saarbrücken
Tutor

Supported graduate and undergraduate instruction in applied data analysis and machine learning.

- Matlab and Data Analysis for PhD Students (Summer 2023): supported analytical programming and data-analysis exercises.
- Elements of Machine Learning (Winter 2023–2024): helped students work through core ML concepts and programming exercises.

Feb 2021 – Aug 2021 University of Khartoum, Khartoum
Teaching Assistant

Prepared and delivered classroom sessions, laboratory sessions, and quizzes for upper-level computer engineering courses.

- *Distributed Systems and Parallel Computing* (EEE51503).
- *Microprocessor and Assembly Language* (EEE41101).

Nov 2020 – Jun 2023 Enigma AI, Khartoum
Software Engineer / CTO & Co-Founder

- Architected the backend of the Enigma Virtual Assistant SaaS, integrating Sudanese-Arabic language capabilities with social messaging channels and production SaaS workflows.
- Led a small engineering team through product design, implementation, and delivery cycles while contributing directly to backend and ML-related implementation.

Technologies: Amazon Lambda/ECS, Docker, Node.js, Python, PyTorch, MongoDB, Facebook Graph API, WhatsApp Business API.

2018–2021 Selected freelance software projects: web, mobile, and data-platform systems, including delivery, ride-sharing, and data science competition platforms.

Talks and Presentations

2021 Mathematics for Deep Learning, *IndabaX Sudan Workshops*

2021 Solving Problems Using Graph-Theoretic Algorithms, *IEEE Sudan – Code Rally*

Honours and Awards

2022 First place prize (€25,000), *Orange Corners Innovation Fund as Enigma AI*
2016 Third position in Sudan in IEEEXtreme10.0
2014 National Undergraduate Education Scholarship
For ranking 3rd nationally in university entrance exams.

Technical Skills

- **AI/ML/Data Science:** PyTorch, NumPy, SciPy, Pandas
- **Languages/Tools:** Python, C#, TypeScript, Docker, Linux, Azure, AWS, LaTeX
- **Platforms/Infra:** ASP.NET, Node.js, Angular, React, Flutter, Odoo, MongoDB