

Sam Rana

📞 (+49) 17632130381 | ✉ sameer.rana2@gmail.com | 🏠 www.samrana.de | 📺 samshady | 🌐 samshady

Professional Summary

Computer Science student (B.Sc.) with strong practical experience in backend engineering (Python, Java), discrete optimization, and production agentic AI systems. Experienced in architecting large-scale data migration pipelines, building deterministic constraint solvers (Google OR-Tools, SimPy), and automating enterprise workflows via custom MCP servers and LLM architectures. Passionate about software craftsmanship, clean system design, and high-leverage process automation.

Work Experience

CargoBeamer AG

Leipzig, Germany

Working Student Software Engineering & AI Solutions

11/2024 - Present

- Architected asynchronous web scraping and ETL data pipelines (Python, FastAPI, Playwright, AWS S3, Cloudflare R2), successfully extracting and migrating over 1.38 million mission-critical freight documents into the new Rail-Flow TMS with zero data loss.
- Engineered a mathematical constraint solver (Google OR-Tools CP-SAT) and discrete-event simulation model (SimPy) to optimize terminal trailer capacities, replacing a 15,900-formula legacy Excel model with 23/23 passing unit tests.
- Designed and deployed production multi-agent workflows (Langdock, Model Context Protocol / MCP) for automated claims triage; reduced clerical intake duration by 64% (saving 192 hours/year across 1,800+ correspondence threads).
- Built full-stack Rail Planning Tool prototype (Python Flask, PostgreSQL, Konva.js Canvas) to visually model train shunting and track capacity, establishing the formal technical specifications for vendor contract tender.
- Developed custom enterprise MCP servers (Odoo ERP, SharePoint) and containerized microservices via Docker across GitLab CI/CD.

Gesundheitsforen Leipzig GmbH

Leipzig, Germany

Working Student Software Testing & Backend Development

2023 - 2024

- Developed scalable backend microservices within an agile engineering team using Java (Spring Boot) and Node.js alongside Angular.
- Utilized modern database and containerization technologies including Docker, PostgreSQL, MySQL, and JDBC in GitLab CI/CD pipelines.
- Significantly elevated software quality by establishing automated end-to-end testing suites using Playwright, cutting regression time.
- Executed and documented unit and integration tests in Java, systematically tracked and managed via TestRail and Jira.

Education

Martin Luther University Halle-Wittenberg (MLU)

Halle (Saale), Germany

Bachelor of Science (B.Sc.), Computer Science (Informatik)

2020 - Present

Key Projects

Reactive Web Applications & Agent Tooling

Independent Software Engineering

Ongoing

- Developed full-stack web applications and CRUD dashboards evaluating modern Python frameworks (NiceGUI, Reflex, FastAPI) and Tailwind CSS.
- Built custom developer tools, local multi-source scrapers (JobSpy, Bundesagentur API), and automated SQLite/Obsidian synchronization pipelines.
- Orchestrated headless local GPU compute clusters (ThinkPad P15s via Tailscale) offloading ComfyUI, Kokoro TTS, Whisper, and Ollama LLMs.

Technical Skills

Programming Languages

Python, Java, TypeScript/Javascript, SQL, Bash, HTML/CSS, Kotlin, C/C++

Frameworks & AI

FastAPI, Flask, Spring Boot, MCP, Langdock, LangChain, Google OR-Tools, SimPy, React, Node.js

Cloud & DevOps

Docker, Podman, GitLab CI/CD, AWS S3, Cloudflare R2, Linux, Tailscale Compute Cluster

Databases & ORM

PostgreSQL, SQLite, SQLAlchemy, Tortoise ORM, MySQL, MongoDB

Testing & Tools

Playwright, Pytest, Git, TestRail, Jira, LaTeX

Languages

English (Bilingual / C2), German (Professional Working Proficiency / C1)