

Geoffrey Karnbach

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EDUCATION

TU Wien (Technical University of Vienna)

Vienna, Austria

Master of Science: Software Engineering

Feb. 2025 – Present

- **Average: 1.0** (52 ECTS completed) | Focus: **Distributed Systems / Software Engineering**
- **Thesis (Ongoing):** "A Graph Neural Network Approach for Pinpointing Root Causes in Microservice Architectures"

TU Wien (Technical University of Vienna)

Vienna, Austria

Bachelor of Science: Software & Information Engineering

Oct. 2021 – Jan. 2025

- **Passed with Distinction (Average: 1.4)**
- **Thesis:** "Multi-Domain Engineering Project Management for Agile Cyber-Physical Production Systems (CPPS) Engineering"

EXPERIENCE

Software Engineer

Aug. 2024 – Jun. 2026

TU Wien (DAMAP Project)

Vienna, Austria

- Engineered the core authentication layer by integrating **EduID**, enabling secure, cross-institutional access for researchers.
- Participated in **high-level architectural design meetings** and in charge of the onboarding process for new engineering hires.
- Used **Quarkus (Java)** and **Angular** to implement complex features, including an automated PDF live preview and admin dashboards.

Student Research Assistant

Dec. 2022 – Sept. 2023

TU Wien (OSSDIP Project)

Vienna, Austria

- Contributed to **OSSDIP** (Open Source Secure Data Infrastructure), developing secure repository nodes, microservices, and CLI automation tools.
- Implemented an **autonomous computing node** for software package caching and automated validation, reducing system setup time for researchers.
- Ported core infrastructure to **Raspberry Pi**, writing custom Python scripts to emulate **Ansible** playbooks on CentOS for hardware-constrained environments.

PROJECTS

TaskInn | Java, Spring Boot, Angular, Kubernetes, GitLab CI/CD | Team of 6

Oct. 2025 - Jan. 2026

- Served as **Technical Architect** for a 6-person team to design a full-scale hotel management ecosystem (1,000+ dev hours), orchestrating the entire guest lifecycle from **Stripe-integrated bookings** to automated **PDF invoice generation**.
- Engineered a high-performance **live event processing pipeline** using **WebSockets** and **STOMP**, enabling real-time room status updates and notifications.
- Established a **DevOps pipeline** using GitLab CI and Kubernetes, ensuring system reliability through a suite of **600+ automated unit and integration tests**.

GNN-based RCA for Microservices | Python, PyG, Docker, OpenTelemetry, Jaeger

Feb. 2026 - Present

- Designed a reproducible **microservice fault-injection testbed** to generate labeled RCA datasets from distributed systems, combining synthetic traffic, controlled failures, and Docker-based service orchestration.
- Built an observability pipeline using **OpenTelemetry**, **Prometheus**, and **Jaeger** to transform runtime traces and metrics into attributed graph snapshots with node, edge, latency, and error-rate features.
- Implemented a **PyTorch Geometric GraphSAGE pipeline** for binary node-level root-cause classification, including dataset validation, feature normalization, train/test split strategies, and Top-1/Top-3 RCA evaluation.

TECHNICAL SKILLS & LANGUAGES

Programming: Java, Python, TypeScript, SQL, Neo4j

Frameworks: Spring Boot, Quarkus, Angular, Flask, RabbitMQ, WebSockets (STOMP)

Cloud & DevOps: Kubernetes, Docker, GitLab CI/CD, Prometheus, Ansible, Skaffold, NGINX, AWS

Core Competencies: Software Architecture, Distributed Systems, Graph Databases, Observability

Languages: **German** (Native), **French** (Native), **English** (Fluent)