# Michael Küchenmeister

Software Engineer &
M.Sc. Graduate

## Contact


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Ingolstadt, Bavaria, Germany


## About Me

I'm a Software Engineer at EDAG Group and hold a Master's degree in Cloud Applications & Security Engineering from Technische Hochschule Ingolstadt. I'm particularly interested in cybersecurity and enjoy working at the intersection of modern software development, artificial intelligence, cloud technologies, and cybersecurity.

## Skills

- Programming
- Cloud Applications
- Cybersecurity
- Data Analytics
- Software Architecture
- Corporate workflows

## IT-Education

### M.Sc. Cloud Applications & Security Engineering

*Technische Hochschule Ingolstadt* — Oct. 2023 - Today

- **Core competencies:** Building and operating secure, scalable cloud-native enterprise systems with a strong focus on modern architectures, automation, and security-by-design.
- **Cloud aspects:** Event-driven data infrastructures (e.g. Apache Kafka, ksqlDB), microservices (e.g. hexagonal architecture), containerization (e.g. Docker), orchestration (e.g. Kubernetes, Helm), CI/CD pipelines (e.g. GitHub Actions), system integration and migration, modern software & system architectures.
- **Security aspects:** Secure software and system architecture, security engineering (e.g. NIST-SP 800-30, NIST 800-207, ISO 3100, SSDLC, DevSecOps, OpenSAMM, SEE-CMM, OWASP Testing Guides), secure modern networks (e.g. firewalls, IDS/IPS, DMZ, zero trust, BGP-Security, IEEE 802.1X, 5G), digital forensics (e.g. deep fake detection), automotive cybersecurity (e.g. ISO/SAE 21434, secure VANET authentication), machine learning driven analysis of the Internet backbone routing protocol (BGP) to discover BGP attacks.
- **AI aspects:** Data analytics, machine learning (e.g. with scikit-learn), deep learning (e.g. with Keras).
- **Business administration aspects:** IT-Consulting and management, service management and digital services.
- **Master thesis:** Comparative evaluation and implementation of phishing website detection methods, including machine learning/deep learning models, LLM-based classification, and blacklist approaches.

### B.Sc. Computer Science

*Technische Hochschule Ingolstadt* — Oct. 2018 - Nov. 2022

- **Core competencies:** Programming (e.g. C, Java, web development), software engineering, computer architecture, operating systems, human-machine interaction, computer networks, algorithms & data structures, web technologies, distributed systems, knowledge-based systems, database systems (e.g. SQL), theoretical computer science, discrete mathematics, project management (e.g. Scrum), functional programming (e.g. Haskell), statistics and combinatorics, IT-Law, IT-Security, fundamentals of business administration and entrepreneurship.
- **Specialization:** Cryptography/cryptology, binary exploitation and vulnerability analysis (e.g. exploit development), advanced Java programming.
- **Bachelor thesis:** Comparative assessment of the FIDO2 and WebAuthn authentication standard against established approaches (passwords, X.509 certificates, one-time passwords), focusing on security, usability, and integration trade-offs.

## IT-Experience

### Software Engineer

*EDAG Group* — Jan. 2023 - Today

- **Fullstack-Software-Engineering:**
  - **Automotive Cybersecurity (Cyber Security Management System, ISO/SAE 21434)**
    - Co-developed backend services for a Cyber Security Management System, including REST API interfaces, an SBOM analysis component for dependency discovery, and an automated CVE monitoring service (scraping multiple vulnerability sources).
    - Implemented core logic to correlate SBOM dependencies with known CVEs to support vulnerability identification across integrated software projects.
    - *Tech-Stack: Next.js, NestJS, TypeORM, PostgreSQL, Docker, Kubernetes, Helm, TypeScript, Go, CycloneDX*
  - **Smart City / Digital Twin Dashboard**
    - Co-developed a modular fullstack dashboard platform enabling municipalities to build digital twins and publish IoT-derived insights (e.g. parking sensor data) in a citizen-centric interface.

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## Skills

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- Data Analytics
- Software Architecture
- Corporate workflows

- Implemented configurable and interactive dashboard panels and a scalable data integration approach to connect various smart city interfaces such as OCIT-C in one platform.
- *Tech-Stack: Next.js, Tailwind CSS, NestJS, PostgreSQL, MongoDB, Docker, Kubernetes, Helm, Jenkins, TypeScript, OCIT-C*

- **Software-Testing**
  - Designed and implemented unit and end-to-end test strategies for CSMS and Smart City backends.
  - Integrated automated test execution into CI/CD to improve release confidence and regression safety.
  - *Tech-Stack: Jest, GitHub Actions, Jenkins, Go*
- **Data Analytics**
  - **Traffic Analytics & Visualization**
    - Built real-time monitoring dashboards in Grafana for municipal traffic/parking data, enabling operational oversight via live occupancy metrics and interactive filtering.
    - The occupancy of registered parking spaces is e.g. displayed in real time using various Grafana visualization and filter options.
    - *Tech-Stack: Grafana, SQL, time-series DBMS*
  - **Recruiting Analytics & Visualization**
    - Conception and implementation of an eRecruiting analytics dashboard in QlikSense based on the professional requirements of the municipality's HR department.
    - Conception and implementation of logical real-time data processing for the eRecruiting dashboard from multiple data sources, including the identification and handling of data quality problems such as the removal of duplicates within and between the data sources.
    - Migration of existing Excel dashboards to QlikSense with the goal of replacing static evaluations with dynamic interactive analyses.
    - Preparation of QlikSense functionalities and content in the form of tutorials and step-by-step instructions to enable municipal stakeholders to independently create QlikSense dashboards.
    - *Tech-Stack: QlikSense, Python, Gitlab*
- **Flow-based, low-code Software Engineering**
  - Designed and implemented a flow-based (low-code) integration with Node-RED to transmit parking sensor data from a time-series database to a traffic management system via OCIT-C, powering dynamic parking signage updates.
  - *Tech-Stack: Node-RED, JavaScript, OCIT-C*

### Identity & Access Management

*Audi AG* Aug. 2021 - Aug. 2022

- **Bachelor thesis**
  - Conducted a theoretical and architectural evaluation of passwordless authentication using FIDO2/WebAuthn, benchmarking it against established mechanisms (passwords, certificates, OTP) across security posture, user experience, and integration complexity.
  - Built a production-like proof-of-concept application leveraging WebAuthn/FIDO2 and deployed it on AWS EC2 to assess real-world behavior, operational constraints, and integration feasibility.
  - *Tech-Stack: React, Spring Boot, AWS EC2, WebAuthn*
- **Internship**
  - Ensured high-quality IAM operations by validating and reviewing user access requests within a SailPoint-driven user management environment.
  - Designed and documented a standardized quality assurance process for IAM request handling, improving consistency and auditability.
  - Assisted the migration of the central identity and authorization directory and the Single Sign-On (SSO) component.
  - Implemented a web application with HTML, CSS and JavaScript to visualize and validate an Identity Provider (IdP) interface via SCIM (System for Cross-domain Identity Management).
  - Deployed and assessed SCIM functionality with IBM Security Directory Server, supporting standard-based provisioning and interoperability testing.