

Alex El-Shaikh

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Citizenship Dual German and Egyptian nationality

GitHub <https://github.com/alexelshaikh>



Software engineer with a PhD in Computer Science and several years of experience in the technical leadership of complex software projects. Focus on scalable system architectures, requirements engineering, and the coordination of development processes in industrial environments.

Professional Experience

04/2026 – Present

Senior Software Engineer

- Responsible for **architectural decisions** with a focus on scalability, maintainability, and **product quality**
- **Analysis** and optimization of existing systems to improve performance, **efficiency**, and **operational reliability**
- Introduction of **cloud technologies**, particularly AWS, to improve scalability and **security** of production applications
- Evaluation and **prioritization** of technical requirements, **coordination** of implementation with **development teams**, and ensuring efficient development **workflows**

02/2025 – 03/2026

Postdoctoral Researcher, Imperial College London (UK)

- **Led** and **coordinated** the development of scalable system architectures and **data-intensive** applications in an **international** research environment
- Analyzed **complex requirements** and **translated** them into high-performance and **robust technical solutions**
- Improved system performance by up to 50% through **targeted optimization of architecture** and data processing
- **Communicated** technical concepts and supervised students

11/2019 – 12/2024

Research Fellow, Marburg University

- **Designed** and developed **new database systems** for processing **large scientific datasets** in the terabyte range
- Held overall **responsibility** for the **coordination** and continued development of database systems within the **project context**
- Developed software solutions used by **international research partners** to support **scientific analyses**

- Analyzed **complex requirements** from **various departments** and **translated** them into scalable **technical concepts**
- **Integrated heterogeneous data sources** and developed ETL processes for structured data processing
- Contributed to the **NFDI4Biodiversity** project, focusing on the standardization of data formats and the development of **interoperable interfaces**

03/2014 – 10/2019

Research Assistant, Marburg University

- **Supervision** of students in Java programming **internships**
- **Organized** and **coordinated** student working **groups**
- Assisted in the **preparation** and **delivery** of **lectures** and practical exercises

Education

11/2019 – 12/2024

PhD in Computer Science, Marburg University

- Awarded the title “Doctor of Natural Sciences (Dr. rer. nat.)”
- Dissertation title: “Implementing random access on DNA data storage systems” (Grade: 1.0 – very good)

01/2016 – 10/2019

M.Sc. in Computer Science, Marburg University

- Master’s thesis title: “Lightweight Indexing on Data Streams” (Grade: 1.3 – very good)
- Minor subject: Economics
- Aug 2016 – Dec 2016: ERASMUS Semester at Aalto University in Helsinki, Finland
 - Enhanced English proficiency
 - Exposure to Finnish academic, cultural, and social environment

03/2012 – 12/2015

B.Sc. in Computer Science, Marburg University

- Bachelor’s thesis title: “Developing an Android game with an interactive water simulation” (Grade: 1.3 – very good)
- Minor subject: Business Administration

Technical Skills & Expertise

Programming Languages	Java (very good), Python (very good), SQL (very good), Rust (good), C#, C++, R, Scala, JavaScript, Kotlin, Lua, Prolog, Julia, Haskell
Backend & Cloud	Spring Boot, AWS, REST APIs
Data & Streaming	PostgreSQL, MongoDB, Apache Kafka, Apache Spark, Elasticsearch, Neo4j, HBase
Tools	Maven, Docker, Kubernetes, CI/CD, JUnit, Pandas, FastAPI, JDBC, JPA, JOOQ
Methods & Working Style	Requirements engineering, agile software development (Scrum/Kanban), systems analysis and solution design, technical project coordination
Areas of Expertise	Database systems, software architecture, object-oriented and modular programming, algorithms and optimization, data processing, parallel programming, software refactoring
Language Skills	German and Arabic (mother tongues), English (level C1)
Interests	Sports (swimming, table tennis), travel, teaching, debates