Utku Birkan

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Meşrutiyet Zafir İş Merkezi No:4 Kapı No:91, 06420 Çankaya / Ankara / Türkiye

Experience

Software Engineer **Jul 2026 – Present**
Deep Network *Munich, Germany*

- Drove the consolidation of a microservice platform based on a code-level dependency analysis, folding multiple microservices into a single **ASP.NET Core** service and retiring the redundant deployments.
- Flattened the layered architecture of several microservices into vertical slices with component tests using **Testcontainers**, removing over 50,000 lines of code while preserving behavior.
- Delivered large-scale refactors through agent-driven development with **Claude Code** and **GitHub Copilot**, steering the work with architecture decision records, specs and implementation plans.
- Modernized shared libraries and standardized HTTP resilience across services.
- Worked with **MongoDB**, **Kafka** on **Redpanda**, and GitOps deployments of **Docker** containers to **Azure Kubernetes Service** using **Argo CD**.

Software Engineer **Sep 2022 – Mar 2026**
Siemens *Ankara, Turkey*

- Worked within a **Scrum** team using the **SAFe Framework** to develop a full stack solution for managing electric grid protection data, starting from the initial system architecture design phase to the delivery of the product.
- Engaged with internal and external stakeholders to specify and refine product requirements.
- Developed event-driven microservices in **C#** using **ASP.NET Core**, working with a **RabbitMQ** event broker using **MQTT** and **AMQP** protocols and **CloudEvents** payloads.
- Managed multi-tenant database migrations for both schema and critical data using **PostgreSQL**, **Microsoft SQL Server** and **EF Core**.
- Used the **Keycloak** identity provider and developed a permissions management library using a hybrid **Entity-Based and Role-Based access control** schema.
- Refactored **Kubernetes** deployments to use **Gateway APIs**, **cert-manager**, and **Helm charts** with an OCI registry. Refactored deployment pipelines running on **GitLab CI/CD** to achieve 70% reduction in execution times.
- Managed development environment deployments using **Amazon Elastic Kubernetes Service**.
- Implemented **OpenTelemetry** metrics, logs and traces on the backend services and non-production clusters. Integrated non-production telemetry into the company-wide **ELK** stack built on **OpenSearch**.
- Led the migration of a legacy **Python** service to ASP.NET Core, leveraging AI-assisted development with **GitHub Copilot** and **Claude Code**, resulting in a 400% performance increase and 50% reduction in the codebase size.
- Collaborated with external teams on developing shared libraries using **C++**. Used ASP.NET Core to expose critical functionality as **gRPC** services to our internal services.
- Maintained an **Angular** frontend application written in **TypeScript**. Maintenance efforts included updating all the services to v21, using a **Vite** based build pipeline, and modernizing core libraries with new signal based APIs.

Working Student **Apr 2022 – Sep 2022**
Siemens *Ankara, Turkey*

- Worked on containerization and closed-network edge delivery of a full-stack application.
- Built a CI/CD pipeline integrating containerization, SBOM generation with **CycloneDX**, CVE scanning with **Trivy**, and threat/risk analysis. Used **JFrog Artifactory** and **GitLab** as OCI registries.

Undergraduate Research Intern **Jul 2020 – Jun 2021**
QWorld *Riga, Latvia*

- Investigated possible simulation implementations of **Moore-Crutchfield quantum finite automata** on noisy intermediate-scale quantum (**NISQ**) computers.
- Studied the class of non-trivial languages that can be recognized by quantum finite automata.
- Implemented a custom transpiler stage to achieve 20% faster quantum circuit execution.
- Simulated automaton executions on hardware with varied qubit topologies using **Qiskit**.

Education

BSc Computer Engineering **Jul 2023**
Middle East Technical University *Ankara, Turkey*
High Honor, 3.58 GPA

Graduation project: aMoment

- Worked within a team to develop a mobile app for easily sharing photographs taken during an event.
- Developed the backend server using **FastAPI** to manage database operations, authentication and running image recognition on photographs.
- Implemented mobile authentication using **Firebase**.
- Deployed our application to **Google Cloud Run** and **Google Pub/Sub** messaging service.

BSc Physics **Jul 2022**
Middle East Technical University *Ankara, Turkey*
High Honor, 3.50 GPA

- Awarded the undergraduate scholarship by The Scientific and Technological Research Council of Turkey (TÜBİTAK).
- Graduation thesis: A Literature Review on Measurement Based Quantum Computing.
- Volunteered for the Quantum Computing Society as an instructor and an organizer.

Publications

Birkan, U., Salehi, Ö., Olejar, V., Nurlu, C., Yakaryılmaz, A. (2021). *Implementing Quantum Finite Automata Algorithms on Noisy Devices*. Lecture Notes in Computer Science (pp. 3–16). Springer International Publishing. doi:10.1007/978-3-030-77980-1_1

Technical Skills

Languages	C#, JavaScript, TypeScript, Python, C++
Frameworks & Cloud	ASP.NET Core, Entity Framework Core, gRPC, RabbitMQ (MQTT, AMQP), Docker, Kubernetes, Helm, AWS (EKS, EC2), PostgreSQL, Microsoft SQL Server, Angular
Tools & Platforms	OpenTelemetry, OpenSearch / ELK, Keycloak, Git, GitHub Copilot, Claude Code, Firebase, JFrog Artifactory, GitLab CI/CD, CycloneDX, Trivy