KEREM FARUK ÖZTÜRK

Electrical & Electronics Engineering | Digital Hardware Design & Verification | AI Hardware & Security | Python, C#/.NET
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PROFESSIONAL SUMMARY

Electrical and Electronics Engineering undergraduate at Istanbul Bilgi University focusing on AI hardware: digital design and verification of neural network accelerators and the security of AI-generated hardware code. Experienced in backend software engineering through payment-system integrations at VakıfBank and AI code evaluation at Outlier (Scale AI). Currently building an FPGA neural network accelerator targeting Tiny Tapeout fabrication and a formal verification pipeline for AI-generated RTL.

EDUCATION

Istanbul Bilgi University 2023 – Expected Jul 2028
B.Sc. in Electrical and Electronics Engineering (100% English Instruction) Istanbul, Türkiye

PROFESSIONAL EXPERIENCE

VakıfBank Jul 2026 – Sep 2026
Software Development Intern – Payment Systems Application Development (Head Office) Istanbul, Türkiye

- **Virtual POS Merchant Integration Application (.NET / C#):** Developed a comprehensive, functional .NET solution enabling external merchants to execute live sale, transaction inquiry, cancellation/void, and refund operations, including scenario-based sample implementations and starter integration templates.
- **Shopify Payments App & Payments Extension (ASP.NET Core / PostgreSQL):** Contributed to a Payments App and Extension bridging Shopify merchants with VakıfBank's virtual payment infrastructure, working on .NET backend services, REST API integrations, EF Core, and PostgreSQL data access across payment, 3D Secure, inquiry, cancellation, and refund flows.

Outlier (Scale AI) Nov 2024 – May 2026
Python Code Reviewer / AI Code Evaluator Remote

- Evaluated AI-generated Python solutions for functional correctness, algorithmic efficiency, and code quality.
- Conducted manual code inspections to detect logical errors, edge-case failures, performance bottlenecks, unsafe coding practices, and potential security vulnerabilities, authoring structured technical feedback reports.

INDEPENDENT TECHNICAL PROJECTS (ONGOING)

Neural Network Inference Accelerator (FPGA & Tiny Tapeout) In Progress
Verilog | cocotb | Icarus Verilog | Verilator | Python | FPGA | Tiny Tapeout (SkyWater 130 nm)

- Designing a compact INT8 neural network inference accelerator in Verilog for handwritten-digit classification, with a multiply-accumulate (MAC) datapath, control FSM, ReLU activation, and argmax output stage.
- Verifying the RTL bit-exactly against a Python reference model with cocotb; deploying on a low-cost FPGA board.
- Comparing variants (weight bit-width, serial vs. parallel MAC) on area, timing, and accuracy before Tiny Tapeout submission.

RTL-SecCheck: Security Verification Pipeline for AI-Generated RTL In Progress
Python | Yosys | SymbiYosys | SystemVerilog Assertions (SVA) | cocotb | LLM APIs

- Building an open-source pipeline that screens AI-generated and community RTL for functional and security defects via lint, simulation, and formal verification.
- Developing SVA security properties mapped to MITRE hardware CWEs (e.g., CWE-1271, CWE-1234); applying them to the accelerator project, then to open-source Tiny Tapeout designs, with responsible disclosure of confirmed findings.

TRAINING & PROGRAMS

Türkiye Siber Vatan Program – AI-Supported Cybersecurity Talent Program (2027 Cohort) Nov 2026 – Present
Republic of Türkiye Ministry of Industry and Technology & Regional Development Agencies Türkiye

- Admitted to the national cybersecurity and AI security talent program; online training phase in progress, followed by penetration testing, AI-for-cybersecurity, and AI CTF stages.

Digital University Platform – Artificial Intelligence and Modern Software Development Nov 2026 – 2027
Council of Higher Education of Türkiye (YÖK) Online

- AI School module on AI-assisted code development, software architecture, requirements, and testing.

Google Türkiye – Artificial Intelligence and Technology Academy One-Year Training Program
Selected Scholarship Recipient Türkiye

- Completed training on LLM fundamentals and AI-assisted development; built an AI-integrated web app in a bootcamp team.

TECHNICAL SKILLS

- **Hardware Design & Verification (Developing):** Verilog, SystemVerilog Assertions, cocotb, Icarus Verilog, Verilator, Yosys, SymbiYosys, FPGA Development
- **Software Development & Backend:** Python, C#, ASP.NET Core, SQL, REST APIs, OOP, Virtual POS & 3D Secure Integrations
- **Tools & Practices:** PostgreSQL, EF Core, Git/GitHub, Docker, Linux, Postman, DBeaver, Code Review, Security Inspection
- **Languages:** Turkish (Native), English (Professional Working Proficiency)