

Hafsa Sheikh

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Education

ETH Zurich Sept. 2025 – Sept. 2027
Computer Science Master Zurich, Switzerland

- **Major: Data Management Systems, Minor: Programming Languages & Software Engineering**
- **Relevant Coursework:** Concepts of Object-Oriented Programming, AI in Education, Big Data, Cloud Computing Architecture, Advanced Systems Lab

ETH Zurich Sept. 2022 – Sept. 2025
Computer Science Bachelor - GPA: 5.15/6 Zurich, Switzerland

- **Bachelor Thesis at the ETH Zurich Secure and Trustworthy Systems Group** Thesis GPA: 6/6
- **Relevant Coursework:** Algorithms & Data structures/Probabilities, Parallel Programming, Systems Programming, Computer Networks, Operating Systems, Data Modeling and Databases, Compiler Design, Human-Computer Interaction, Information Retrieval, Introduction to Machine Learning

Experience

ETH Zurich Feb – Jun 2024, 2025, 2026
Teaching Assistant - Digital Design and Computer Architecture Zurich, Switzerland

- Assisted and guided students through 10 hands-on lab sessions covering digital circuit design, Verilog and MIPS assembly programming, FPGA, and system integration.
- Reviewed and evaluated student lab submissions, providing feedback to improve understanding of digital design and computer architecture concepts.

Projects

Mobile App: KnowHouse | Dart, Flutter, Firebase

- Collaboratively developed a mobile application for managing household tasks, enabling users to **assign and accept tasks**, **track rewards**, and **share instructions**. Implemented **real-time collaboration**, **leaderboards**, a **shared calendar**, **personalized task recommendations**, and **user profiles** to foster engagement and enhance family collaboration. The App is published on the Google Play Store.

Cloud Computing Architecture Project | Google Cloud Platform, Python, Kubernetes, Kops

- Built schedulers to co-locate **latency-sensitive** (memcached) and **batch** (PARSEC) workloads efficiently in the cloud. Characterized resource **interference** with **iBench** and PARSEC **scalability**, then applied the findings to schedule on a **heterogeneous VM cluster** (static load) and a **single machine** (dynamic load).

FastGATr | C++, Python, ARM NEON SIMD

- Optimized a **geometric algebra transformer** on Apple M1: exploited **structure-tensor sparsity** via generated kernels ($\sim 140\times$ **fewer ops**), plus ILP, operator fusion and cache-aware weight repacking. **Hand-vectorized with NEON intrinsics** for $1500\times$ over a naive C++ baseline and $1.7\text{--}4.5\times$ over the optimized PyTorch reference (EzGATr).

Technical Skills

Programming Languages: Java, Dart, C, C++, Python, HTML, CSS, SQL, OCaml, Haskell, Verilog
Frameworks/Technologies: Flutter, Firebase, PyTorch, JSON, XML, GitHub, GitLab, Vivado

Languages

Proficiency Levels: German (native), English (fluent), French (basic)