Mustafa Saqib

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EDUCATION

University of Saskatchewan — **Saskatoon, Saskatchewan**
BSc Computer Science (Minor in Biology), With Distinction — *Graduating August 2026*

- **Courses:** Operating Systems, Data Structures & Algorithms, Computer Architecture, Cloud Computing, Computer Vision, Artificial Intelligence, Object-Oriented Systems
- **Awards:** USask Guaranteed Entrance Scholarship

EXPERIENCE

Flippy — **Jan 2025 − April 2025**
Founding Full-Stack Software Engineer — *Remote, Canada*

- Owned **backend architecture** for **Flippy**, an AI-powered learning platform used by 70+ students; shipped **RESTful API endpoints** with **JWT authentication, RBAC**, and real-time **Firestore sync** handling **concurrent sessions** with low-latency state propagation
- Built a **document ingestion pipeline** converting uploaded slides into **schema-validated LLM-generated** flashcards, directly contributing to a **20% improvement** in exam scores; wrote **unit and integration tests** across all API endpoints ensuring reliability through the full SDLC
- Implemented **real-time deck sharing** across users with **role-based access control**, leveraging **Firestore listeners** for instant cross-user state propagation without polling

INJAZ UAE — **Jan 2022 − April 2022**
Program Development Intern — *Dubai, UAE*

- Reduced manual preparation time by **40%** by building **Python ETL pipelines** to ingest, clean, and classify 120+ educational resources with automated metadata tagging
- Developed scheduling and reporting automation tools used by 20+ instructors across programs serving 300+ students

PROJECTS

Autonomous IVR Navigation Agent ([Website](#) | [GitHub](#)) — **Nov 2025 − Present**
Python, FastAPI, WebSockets, Twilio, Gemini 2.5, Vosk, WebRTC VAD

- Shipped an autonomous voice agent that navigates unpredictable real-world IVR systems with no human in the loop, saving callers an average of **15 minutes** of hold time across **10 production IVR systems**
- Built a **FastAPI backend** with an explicit **call-state machine** classifying live audio via **ASR and VAD**, driving autonomous **DTMF navigation** decisions in real time during live telephony sessions
- Coordinated concurrent **WebSocket audio ingestion**, **Twilio conference bridging**, and multi-service API calls against shared session state under strict real-time telephony timing constraints

Distributed Cross-Language Chat System ([Website](#) | [GitHub](#)) — **May 2025 − July 2025**
Java, Rust, C# (.NET), Node.js, PostgreSQL, Docker, JWT

- Designed a **language-agnostic TCP/JSON protocol** enabling any client to communicate with any server interchangeably, achieving **cross-language interoperability** without shared libraries
- Implemented **multithreaded** (Java) and **async Rust/Tokio** server architectures validated under **200 concurrent users**, supporting interoperability across multiple transport protocols (TCP, gRPC, Java RMI) and multiple server implementations
- Integrated **JWT authentication** and **PostgreSQL persistence** for secure session management and durable message history; containerized all services with **Docker** for reproducible multi-service deployments

Fair-Share CPU Scheduler ([GitHub](#)) — **Dec 2024 − Jan 2025**
C, xv6 OS, RISC-V

- Implemented a **kernel-level** fair-share CPU scheduler enforcing **proportional allocation** and **starvation prevention** across concurrent processes
- Modified runnable-queue synchronization and implemented custom system calls; validated correctness via **CPU-bound stress testing** and kernel-level **race condition debugging**

Atrial Fibrillation Detection from ECG (MIT-BIH AFDB) ([GitHub](#)) — **Aug 2025 − Nov 2025**
Python, PyTorch, NumPy, SciPy

- Built an end-to-end ML pipeline over 84k windowed ECG samples (23 patients), achieving **0.94 macro ROC-AUC** under leave-one-patient-out cross-validation, outperforming logistic regression baseline (0.55)

TECHNICAL SKILLS

Languages: Python, Java, C, Rust, C#, JavaScript, Scala, TypeScript, SQL, HTML, CSS
Backend & APIs: RESTful API Design, FastAPI, Node.js, WebSockets, Microservices, Unit & Integration Testing, RBAC
Databases & Cloud: PostgreSQL, MongoDB, Firebase Firestore, GCP, Docker, CI/CD, Git, Linux
Systems: Multithreading, Concurrency, Distributed Systems, System Design, OS Internals