

Koushik Kheda

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Education

Wilfrid Laurier University

Bachelor of Science in Computer Science

Waterloo, ON

Expected Graduation: 2029

Technical Skills

Languages: Rust, C/C++, Python, TypeScript, JavaScript, SQL, Nix, Lua, GO, Java

Backend/Systems: Axum, Node.js, FFmpeg, GStreamer, SQLite, Linux (Arch/NixOS), Git, Agile, Bash, SpringBoot, Django, Fast API, Cloudflare Tunnels, Cloudflare R2, Docker, Convex, Postgres

Frontend/Media: React, HLS, WebRTC, RTMP, Vite, Iced, Tailwind CSS, JQuery

Projects

Personal Video Streaming Platform | *Rust (Axum), React, FFmpeg, HLS, SQLite* 2026

- Architected a high-performance media server featuring HEVC-to-HLS transcoding and automated subtitle extraction from MKV containers using FFmpeg.
- Optimized video delivery via HTTP Range Requests for byte-range seeking and adaptive bitrate streaming with HLS.js, ensuring seamless playback of unsupported codecs.
- Implemented an asynchronous file crawler with parallel scanning to index multi-terabyte libraries, utilizing SQLite for persistent state management and real-time background task tracking.

chimera (Distributed Manga Reader) | *Deno, Hono, SolidJS, SQLite, Python, WebSockets* 2026

- Built a distributed manga reading platform with a Deno/Hono backend, SolidJS frontend, and Python host agent that scans local libraries and registers series, volumes, and pages over WebSockets.
- Designed a SQLite-backed metadata layer for hosts, series, volumes, and page mappings, enabling host-aware browsing and tokenized reading sessions for online libraries.
- Implemented on-demand page relay, where the backend requests image bytes from selected hosts and serves preview/reader endpoints over HTTP for remote low-latency reading.
- Developed recursive volume scanning and manifest generation pipelines to normalize directory structures, infer volume ordering, and index large image-based collections automatically.

Real-Time Streaming/Remote Control | *TypeScript, Bun, React, WebRTC* 2026

- Built a dual-backend streaming platform using TypeScript and Bun (Elysia), maintaining 100% API parity for sub-second latency WebRTC streaming via MediaMTX and WHEP.
- Engineered Linux window automation using xdotool and xprop, enabling remote keyboard control and dynamic window state monitoring across X11/Wayland display servers.
- Developed a React frontend with Vite, implementing Zod for runtime type safety.
- Orchestrated hardware-accelerated media pipelines using FFmpeg to optimize real-time screen capture and low-latency transcoding performance.

Experience

McDonald's | *Kitchen Staff*

2022 – Present

Cambridge, ON

- Collaborated in high-volume team environments, managing time-critical tasks under intense pressure while maintaining strict quality standards.

Inquisitive Learning | *Peer Tutor*

2023 – 2025

Cambridge, ON

- Translated complex technical and mathematical concepts, including Calculus and Logic, into digestible lessons for student peers.