

Koushik Kheda

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EDUCATION

Wilfrid Laurier University
Bachelor of Science in Computer Science

Expected Graduation: 2029
Waterloo, Ontario

EXPERIENCE

Research and Development Assistant – Wilfrid Laurier University | *Waterloo, Ontario*

2026 – Present

- Collaborating with a university professor to design and build an academic platform for courses, assignments, student teams, and GitHub repositories.
- Translating instructor requirements into workflows for course setup, student grouping, repository linking, and project activity review.
- Building GitHub contribution dashboards that surface commit activity and help instructors compare individual and team participation over time.
- Developing separate professor and student experiences with role-based permissions, GitHub authentication, and instructor-only controls.
- Designing dashboards that combine repository activity, student contributions, team progress, and assignment information in one interface.
- Iterating on features through professor feedback, prototype demonstrations, testing, and remote deployment of working builds.
- Validating authentication, repository synchronization, course management, and student-group workflows end to end before professor review.

Peer Tutor – Inquisitive Learning | *Cambridge, Ontario*

2023 – 2025

- Tutored students in mathematics and logic using step-by-step explanations tailored to each student's understanding and problem-solving approach.
- Adapted lessons, examples, and practice exercises around individual learning styles and areas that required additional support.
- Broke down complex problems into smaller concepts to strengthen independent reasoning and help students solve unfamiliar questions with less guidance.
- Prepared structured practice material and worked one-on-one with students to reinforce concepts, identify weak areas, and build confidence.

Kitchen Staff – McDonald's | *Cambridge, Ontario*

2022 – Present

- Managed time-sensitive tasks in a high-volume team environment while maintaining food quality, cleanliness, and service standards.
- Coordinated orders, restocked workstations, and moved between multiple stations to maintain an efficient kitchen workflow during peak periods.
- Communicated with team members to keep orders accurate and moving efficiently while balancing multiple responsibilities under time pressure.
- Maintained organized workstations and consistent service quality while adapting quickly to changing order volume and staffing needs.

PROJECTS

Miyagi | *TypeScript, React, Bun, Hono, GitHub OAuth, Docker*

2026

- Built a full-stack academic platform for professors to manage courses, assignments, student teams, and GitHub repositories.
- Integrated GitHub OAuth and repository data for separate professor and student access with contribution tracking.
- Developed a React frontend and Bun/Hono backend for authentication, course management, dashboards, and repository tracking.
- Structured backend modules for users, courses, assignments, repositories, authentication, and dashboards.
- Containerized and deployed with Docker, GitHub OAuth configuration, and remote hosting for professor testing.

Sighting | *Python, Qwen3-VL, LoRA, FAISS, FFmpeg, Modal*

2026

- Built a computer vision retrieval system for movie-frame search using multimodal embeddings, reranking, and model verification.
- Fine-tuned Qwen3-VL with LoRA, raising average precision from 0.580 to 0.841 and ROC-AUC from 0.736 to 0.919.
- Built an FFmpeg pipeline for frame extraction and 2,048-dimensional Qwen3-VL embeddings for FAISS semantic search.
- Implemented crop-aware reranking and multi-stage verification to improve small-object detection and reduce false positives.
- Built evaluation pipelines for labeled datasets, model comparisons, classification metrics, and qualitative error analysis.

Chimera | *Deno, Hono, SolidJS, SQLite, Python, WebSockets*

2026

- Built a distributed manga reader with a Deno backend, SolidJS frontend, and Python agent for local library indexing.
- Designed SQLite schemas and WebSocket synchronization for hosts, metadata, library updates, and reading progress.
- Implemented automatic media discovery and synchronized library state across connected clients and remote hosts.
- Built progress synchronization to keep reading state consistent as clients connected, disconnected, or updated libraries.
- Created browser workflows for navigating libraries, tracking reading progress, and managing remote hosts from a single interface.

SKILLS

Programming Languages:	Python, TypeScript, Java, Rust, C, C++, SQL
Frameworks & Libraries:	React, Axum, Hono, FastAPI, Django, Node.js, SolidJS
Developer Tools & Technologies:	Linux, Docker, Git, PostgreSQL, SQLite, FFmpeg, HLS, WebRTC, WebSockets, REST APIs
Cloud & Deployment:	DigitalOcean, Caddy, Cloudflare Tunnel, Docker, Linux
AI / ML:	PyTorch, Qwen3-VL, LoRA, FAISS, OpenAI API, Embeddings, RAG, Vector Search