

Affan Khan

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EDUCATION

McMaster University
B.Eng Software Engineering

Hamilton, ON
Expected Apr 2028

EXPERIENCE

FlightReady AI

Chief Technology Officer

Delaware, US (Remote)

Dec 2025 – Present

- Architecting production **iOS aviation app** serving **100+ active beta testers** (24,600+ lines of Swift), designing **Coordinator + MVVM + Repository** architecture with protocol-based DI and **17-table Supabase backend** with **28 indexes** and **13 RLS policies**.
- Optimized critical performance paths: **40–50% faster startup** via parallelized async fetches, **90% fewer sorts** with cached arrays, and **50–70% faster queries** through composite indexing and device-level data isolation.
- Authored **478 unit tests** across 12 test suites using protocol-based mock injection, integrating **Google Gemini** for AI co-pilot, **OpenAI TTS** for voice-driven checklists, and **Apple Speech Recognition** across **6 aircraft types**.
- Deployed **dual AI agent pipeline** automating outreach, daily standups, code reviews, and beta tester management via **Discord bot** integration with **multi-LLM fallback** (Gemini → Kimi K2.5) and **Tailscale** remote access.

Scholars Education

Coding Instructor & STEM Tutor

Oakville, ON

Apr 2025 – Present

- Designing and delivering **Python** curriculum for students, building hands-on projects covering **data structures, algorithms**, and applied programming fundamentals.
- Tutoring high school students in advanced **calculus, physics, and linear algebra**, driving measurable improvement in comprehension and exam performance.
- Identified operational gap and built **PRISM** — a full-stack **AI tutoring platform** currently in beta at Scholars Education, managing session workflows, **AI-generated homework**, and parent communication.

SoluDe

Technical Analyst

Oakville, ON

Jun 2024 – Jul 2024

- Delivered proficient **technical support** to clients through telephone channels, managing **issue ticket pipelines** and applying **UX design principles** to optimize web content for seamless user experience.

PROJECTS

Argus (Google × Cerebral Valley Hackathon) | buildargus.dev | *Next.js, TypeScript, E2B, AI Agents*

2025

- Engineered **Self-Healing Autonomous Agent** with AST parsing and **Playwright** to detect runtime errors and auto-patch code within secure **E2B sandbox**. Won **1st place** at **Google × Cerebral Valley Hackathon**.
- Built real-time **Multi-Model generation pipeline** supporting **11 AI models** across 6 providers with SSE streaming and **FireCrawl** deep extraction, processing up to **847 elements per site** in **~10 seconds**.

PRISM (Beta — Scholars Education) | *Next.js, TypeScript, Google Gemini, Supabase*

2025 – Present

- Built full-stack **AI tutoring platform** with **4-role RBAC** enforced via **Supabase RLS**, integrating **Google Gemini** for automated homework generation, progress comments, and **session summarization** with email delivery.
- Engineered **7 app modules** including real-time **QR-based check-in**, multi-center management, voice-driven tutoring via **speech recognition**, and **Three.js**-powered interactive learning interface.

SkyForge (FlightReady AI) | *Python, PyTorch, Hugging Face, QLoRA, vLLM, Weights & Biases*

2026 – Present

- Fine-tuning **Mistral 7B** via **QLoRA** (rank-64 adapters) on aviation instruction dataset generated from **6 aircraft POH manuals, FAA handbooks**, and **461 structured emergency procedures** sourced from FlightReady AI's production database.
- Building **SkyBench** — 200-question aviation evaluation suite scored by **GPT-4o judge** across 6 categories, deploying inference via **vLLM** on **Modal** with **OpenAI-compatible API** as drop-in replacement for Gemini in FlightReady AI.

TECHNICAL SKILLS & AWARDS

Languages: Python, Swift, TypeScript, JavaScript, SQL (Postgres), HTML/CSS

AI/ML: Google Gemini, Anthropic Claude SDK, OpenAI API, Vercel AI SDK, Groq, LangChain

Infrastructure: Supabase, Vercel, Firebase, Upstash Redis, Sentry, Stripe, E2B Sandbox, Docker, Git, CI/CD

Frameworks: Next.js, React, SwiftUI, Tailwind CSS, Node.js, FastAPI, Playwright, Vitest, XCTest

Awards: **Google × Cerebral Valley Hackathon Winner**, FlightReady AI Beta Launch (iOS)

Coursework: IBM AI Foundations, Data Structures & Algorithms, Software Design, Linear Algebra