Aditya Manuja

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Education

University of Waterloo — Waterloo, ON
Honours Bachelor of Computer Science, Double Degree Co-op — *Sept. 2024 – Dec. 2028*
- GPA: 3.7 — Term Distinction: 5/5 terms — President's Scholarship of Distinction

Wilfrid Laurier University — Waterloo, ON
Honours Bachelor of Business Administration, Major in Finance — *Sept. 2024 – Dec. 2028*

Experience

Incoming C++ Software Engineer Co-op — Jan. 2027 – Apr. 2027
GTS (Global Trading Systems) — *Kitchener, ON*

Software Engineer Co-op (Retained Part-Time) — Jan. 2026 – Dec. 2026
Ciena Corporation — *Ottawa, ON*
- Built pluggable Linux procfs collectors to profile CPU, memory, and page faults across 50+ C/C++ microservices, enabling automated performance monitoring in 200+ weekly Jenkins runs.
- Developed a Python metrics pipeline to normalize test results, manage backward-compatible PostgreSQL schemas, and generate Grafana-linked reports.
- Cut Jenkins regression-suite runtime 60% (40 to 16 minutes) by profiling test durations and partitioning the workload across 3 balanced parallel pipelines.
- Enabled isolated testing of RPC-dependent C/C++ code by adding response mocking to a test harness used across 50+ microservices.

Embedded Software Developer Co-op — May 2025 – Aug. 2025
Ciena Corporation — Co-op Student of the Year Nominee — *Ottawa, ON*
- Resolved 40+ C/C++ production defects in Linux networking software, tracing heap corruption, buffer overflows, and memory leaks to root causes using GDB core dumps, AddressSanitizer, and Valgrind.
- Prototyped automated-test integration for a 10K-line OpenConfig Resource Adapter microservice by linking framework executables through Automake and implementing C code to initialize service configuration.

Projects

Pause-Aware Speech Completion | *C++20, ONNX Runtime, whisper.cpp, llama.cpp* — GitHub | Sept. 2026
- Built an on-device C++20 speech assistant that detects 250 ms hesitations through Silero VAD and a deterministic state machine, transcribes audio with whisper.cpp, and generates 3 continuation candidates using quantized llama.cpp models.
- Kept 16 kHz CoreAudio capture free of locks, allocations, and inference by passing audio through a lock-free SPSC ring buffer to worker threads running voice activity detection, transcription, and generation.
- Prevented stale suggestions when speech resumed using immutable audio snapshots and revision-based invalidation, verified through deterministic WAV-driven pipeline tests with CTest and ASan/UBSan for project code.
- Benchmarked 4 model/token configurations on 80 English/French prompts, measuring 41% lower median and 54% lower p95 predictor latency with 30% lower peak RSS for SmolLM2-360M versus Qwen2.5-0.5B at 3 tokens on a dual-core Intel i5.

Serverless Travel Planner | *TypeScript, React, Cloudflare Workers, D1* — GitHub | Oct. 2025
- Built an AI travel assistant on Cloudflare Workers using Agents SDK and tool calling to coordinate destination suggestions, travel preferences, and live Amadeus flight searches.
- Enabled city-based flight searches by implementing OAuth2 authentication, city-to-IATA resolution, and Amadeus response normalization for React flight cards.
- Implemented streamed assistant responses in React and persistent travel-date storage in D1 so users receive incremental responses and retain availability across sessions.

Open Source Contributions

- DuckDB (merged PR #24933): Fixed unsigned integer underflow in NTILE execution by clamping row positions to ROWS frame bounds, with SQL regression coverage for NTILE and ROW_NUMBER.

Technical Skills

Languages: Python, TypeScript, SQL, C++, C, JavaScript, Java, Go, Bash, YANG
AI & Inference: Agents SDK, Tool Calling, ONNX Runtime, whisper.cpp, llama.cpp
Web & APIs: React, Cloudflare Workers, REST/RPC APIs
Data & Monitoring: PostgreSQL, D1, Kafka, Grafana
Systems & Testing: Linux, Concurrency, GDB, AddressSanitizer, Valgrind, Make/Automake, CMake, GoogleTest, CTest, Jenkins, Git