

MANI RASHAHMADI

+1 647-287-2342 | mani@caliburlabs.com | [linkedin](#) | [github](#) | manirashahmadi.com

EDUCATION

University of Guelph

B.Eng - Systems Engineering & Computing - Co-op

Guelph, ON

September 2022 – May 2027

TECHNICAL SKILLS

AI/ML & NLP: RAG Pipelines, Agent Orchestration, NLP/Entity Extraction, DSPy, LangChain, LangGraph, PyTorch, Pydantic AI, Scikit-learn, Vector Databases

Languages: Python, SQL, JavaScript/TypeScript, C/C++, VHDL, Java, Go

Infrastructure & Data: PostgreSQL, Supabase, Docker, Azure (Container Instances, Functions, Cognitive Search, AD, OpenAI Service), Vercel, FastAPI, CI/CD, Git, Linux (RHEL)

Software Development: React, Node.js, Pydantic, Claude Code, Multi-Agent Orchestration

EDA & Digital Design: Cadence Spectre/OCEAN/Genus/Innovus, Synopsys PrimeTime/Design Compiler, Siemens Calibre, FPGA, GPDk045

PROFESSIONAL EXPERIENCE

First Principles Research, Inc.

Consulting Software Engineer

San Francisco, CA (Remote)

March 2026 – Present

- Building a content engine for Atlas Network using **Supabase**, **Vercel**, and **Anthropic/Grok APIs** for automated content processing and delivery
- Designing full-stack architecture with serverless functions, **PostgreSQL** schema design, and API integrations for an early-stage product

Flodraulic Systems Inc.

Systems Engineer Co-op

Guelph, ON

January 2026 – Present

- Proposed company's AI strategy and built automated extraction pipeline that reverse-engineers **Danfoss** proprietary binary formats into structured, queryable knowledge – turning undocumented industrial control data into natural language-searchable documentation
- Parsed and structured 85+ binary record types, reconstructing page hierarchy, wire connectivity, and block naming across projects with 1,200+ pages and 3,700+ blocks from formats with zero existing documentation

University of Guelph – Dr. Gharabaghi Research Group

Research Engineer – Municipal Data Infrastructure

Guelph, ON

September 2025 – Present

- Building real-time data pipelines and dashboards for a **City of Guelph** municipal partnership (in collaboration with **Flodraulic Systems**), processing sensor data for winter road condition monitoring and salt truck route optimization
- Managing data collection infrastructure and stakeholder relationships across partner organizations in a government-funded research program
- Designed and installed hardware prototypes and production units on field sites for environmental monitoring systems

University of Guelph Computing & Communications Services

AI Researcher – Knowledge Systems & RAG Integrations

Guelph, ON

May 2025 – August 2025

- Built three **RAG** ingestion pipelines that parsed unstructured institutional documents (**SharePoint**, **Teams**, **FootPrints**) into searchable knowledge bases, deployed on **Azure Container Instances** with **Docker**
- Developed custom **MCP** servers integrating LLMs with university systems using **Azure Functions** and **Azure OpenAI Service**, enabling natural language querying of institutional data across departments
- Evaluated 5+ agent architectures, implementing modular workflows using **DSPy**, **LangChain**, **LangGraph**, and **Azure Cognitive Search** for semantic search and knowledge retrieval at scale
- Implemented **Azure AD**-integrated access control with **SpiceDB**, enabling secure, department-specific AI assistants with granular permissions
- Architected **Azure Machine Learning** pipelines and automation infrastructure using **Claude Code**, contributing to the university's enterprise AI strategy

University of Guelph Computing & Communications Services

Network Infrastructure Co-op

Guelph, ON

May 2024 – August 2024

- Maintained campus-wide Wi-Fi systems and contributed to migrating the device database to a new platform, improving accessibility for 100+ employees

Zamand Co.

IT Admin/Developer

Tehran, Iran

September 2019 – November 2021

- Set up company website, email hosting, and automated accounting workflows; provided technical support and training across the organization

PROJECTS

Autonomous Chip Design Exploration Platform | [torch2rtl](#) · [eda-pilot](#)

December 2025 – Present

- Built an end-to-end EDA automation platform where **LLM agents** orchestrate commercial tools (**Cadence Genus/Innovus, Synopsys PrimeTime, GPDko45**) – full PyTorch-to-timing-signoff in ~11 minutes
- Produced a working 4-lane SIMD GPU (320 parameters, int8 quantized, 25.8 kGE, 118 MHz, 0.6 mW) and ran the lowRISC **Ibex RISC-V** core through 12 configurations matching published references within 1–15%
- Extended platform with analog neuromorphic research: coupled oscillator optimization over 24–52D parameter spaces (CMA-ES, 2,000+ **Spectre** simulations) and verification of a 23-block neuromorphic compute core on CMC Cloud

Zed Code Editor – Agent & UI Contributions | [Open Source](#)

2025

- Contributed to agent framework, enhancing terminal-based agent observability to improve failure recovery
- Resolved UI bugs and collaborated with core developers via GitHub issues and PRs

Apple MCP | [Open Source](#) – 3,000+ stars

February 2025

- Contributed Apple Mail integration to the **apple-mcp** project (3k+ GitHub stars) using **JXA/AppleScript** – email search, attachments, scheduling, and error recovery for **Model Context Protocol**

AI-Powered Schedule Processing | [Personal Project](#)

August 2024

- Built NLP schedule management system with **GPT-4**, deployed as a **Python/FastAPI** backend with **Pydantic** validation and **Docker** containerization

Real-Time Digital Voltmeter System | [University Course Project](#)

2024

- Engineered precision voltmeter using **K60 microcontroller** with <1% error through 16-bit ADC and interrupt-driven ADC/DAC integration, using **Claude 3.5 Sonnet** for test development

ACADEMIC INVOLVEMENT

Crescentia | [Founder & Lead Organizer](#)

September 2024 – Present

- Founded and lead a student workspace community hosting weekly project demonstrations and collaborative work sessions, fostering an environment for innovation and creativity among 20+ members

CERTIFICATIONS & TRAINING

The Toronto School of Foundation Modeling

Mastering Go Programming (Udemy Certification)

SOLIDWORKS Associate Certification (CSWA)