

CALLUM ARUL

Toronto, ON

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SKILLS

Languages:	Python, SQL, C++, Java, Kotlin, XML
Frameworks:	PyTorch, Pandas, Numpy, Scikit-learn, Matplotlib, LangChain, LangGraph,
CloudOps:	GCP, Vertex AI, Firebase, Firestore, Kubernetes, Kubeflow, Docker
Other:	Git, SQLite, Perf, GoogleBenchmark
Proficiencies:	ML/DL, RLHF, AI Agents, RAG, Prompt Engineering, Full-Stack Dev, Data Structures and Algorithms

WORK EXPERIENCE

Gen AI Data Operations and Projects Manager	Oct 2024 - Present
Surge AI	Remote, Full-time
<ul style="list-style-type: none">Collaborated with top researchers at Google and other major tech companies to shape strategy and drive progress on frontier LLM development.Owned and led end-to-end initiatives advancing frontier LLM capabilities, including tool use, multi-modal understanding, web interaction, and real-world task execution across productivity and communication tools.Designed and managed high-signal evaluation pipelines with advanced quality control, achieving >80% inter-rater agreement across large-scale annotations for reasoning, factuality, and agentic behavior.	
Gen AI Engineer - LLM Optimization	Sep 2024 - Present
Various Companies	Consultant/Freelance
<ul style="list-style-type: none">Trained and fine-tuned LLMs using RLHF and prompt engineering to optimize code generation, significantly improving the accuracy and efficiency of the generated code.Integrated enterprise APIs with models, enabling tool calls and supporting agentic workflows. Conducted stress testing with adversarial prompts to enhance resilience across diverse enterprise applications.Automated model training and deployment by building scalable data pipelines on Google Cloud Platform, utilizing Kubeflow for workflow orchestration and Vertex AI for model training and deployment.	

PROJECTS

RBC AI Banking Agent github.com/AIBankingAgent	May 2025 - May 2025
<ul style="list-style-type: none">Built a context-aware RAG chatbot using LangChain and Gemini API, capable of delivering real-time responses grounded in scraped RBC policy documents via vector search and embedded metadata.Integrated multi-step function calling with MCP to simulate secure banking operations (e.g., authentication, fund transfer, balance display), enabling realistic back-end interaction within a conversational flow.Designed a frontend with SSE-based streaming and engineered intent classification through prompt-based routing, allowing the bot to distinguish FAQs, transactions, and escalation triggers with high contextual precision.	
Heart Disease Classification github.com/HeartDiseaseClassification	Jan 2025 - Jan 2025
<ul style="list-style-type: none">Built and evaluated ML models (Logistic Regression, KNN, Decision Tree, Random Forest, XGBoost) to classify heart disease, achieving 88% accuracy with XGBoost.Conducted full ML pipeline including EDA, feature engineering, hyperparameter tuning, and performance evaluation using confusion matrix and ROC-AUC.	
Media Hub App streamline.github.io	Sep 2023 - Dec 2023
<ul style="list-style-type: none">Developed a full-stack Android Studio application in a team of 5 (with Git) using Kotlin and XML, allowing users to browse, track, curate and share media.Architected the MVVM structure, implementing the database, ViewModel and UI layer. Integrated the Steam API and The Movie Database API for media retrieval, with user authentication and database management powered by Firebase on Google Cloud.	

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Custom Compiler | [github.com/CustomCompiler](https://github.com/CallumArul/CustomCompiler)

May 2023 - Aug 2023

- Built a comprehensive compiler in **Java** for a proprietary programming language, offering robust error handling.
- Implemented Abstract Syntax Tree and Visitor design pattern for **lexical, semantic analysis, expression evaluation** and **code generation**. Included support for functions, recursion and type casting.

Search Optimization | tinyurl.com/SearchOptimization

Jan 2023 - Apr 2023

- Researched and implemented binary search optimization techniques, **reducing data search latency** in large datasets by **150%**.
- Conducted performance testing using **GoogleTest**, **GoogleBenchmark** and **perf** to identify bottlenecks.
- Documented detailed procedures, performance benchmarks, and profiling results to ensure reproducibility.

Social Game Platform | [github.com/SocialGamePlatform](https://github.com/CallumArul/SocialGamePlatform)

Sep 2022 - Dec 2022

- Led a team of 8 to develop an end-to-end social game platform (with **Git**) in modern **C++**, placing 1st among 6 teams.
- Created an **asynchronous scripting engine** and implemented **expression resolution** for a custom game-specification language, enabling dynamic game production.
- Created a recursive multi-type data structure as the core container for all game data.

EDUCATION

George Brown College | Toronto, ON, Canada

Jan 2025 - Dec 2025

Post-graduate Certificate in Applied AI Solutions Development

Simon Fraser University | Vancouver, BC, Canada

Sep 2018 - Dec 2023

B.Sc., Computing Science

CERTIFICATIONS

Introduction to LangGraph (Certification) | LangChain Academy

Oct 2024 - Nov 2024

- Built a multi-agent research assistant with **RAG** and human-in-the-loop using **LangGraph** and **OpenAI API (GPT-4o)**. Employed a Mixture-of-Experts system and parallel agent orchestration for optimized retrieval and response accuracy.
- Built a conversational task manager agent with **persistent memory** and hot path memory using LangGraph and the OpenAI API (GPT-4o). Utilized **OpenAI Structured Outputs** to manage function calling.

PyTorch for DeepLearning (Course) | YouTube ([learnpytorch.io](https://www.youtube.com/watch?v=JG1n0YU0000))

Sep 2024 - Nov 2024

- Gained extensive practical experience in building and training deep learning models using PyTorch.

Deep Learning Specialization (Certification) | Coursera (Andrew Ng - DeepLearningAcademy)

May 2024 - Sep 2024

- Developed expertise in deep learning, covering CNNs, RNNs and attention mechanisms using Python and TensorFlow.

Machine Learning A-Z (Certification) | Udemy

May 2024 - Sep 2024

- Built machine learning models including regression, classification, clustering, deep learning and RL models in Python using pandas, numpy, sklearn and XGBoost.

EXTRACURRICULARS

- **Soccer Team Captain:** Led teams to top positions through effective communication and strategy adaptation.
- **Model United Nations (MUN) Chairperson:** Presided over numerous conferences including events with hundreds of participants.
- **MUN Delegate:** Secured 15 awards in 20 conferences by producing creative solutions to real-world problems.
- **Mentor:** Mentored and led an MUN delegation achieving the most awards in the city to date.