

Principal Architect AI/ML | Machine Learning Researcher

I am a seasoned professional with a strong background in machine learning, particularly in the field of Generative AI. My academic and industry experience have equipped me with a deep understanding of neural networks, prompt engineering, RAG-based systems, and large language model fine-tuning. I am seeking a role which complements my expertise in the field of AI/ML.

SKILLS

Generative AI: Prompt Engineering, Retrieval Augmented Generation, LLM Finetuning

ML Libraries: OpenAI, Pandas, Matplotlib, Sentence-Transformers, RAGAS

Frameworks: LangChain, LlamaIndex, TensorFlow, Keras, Scikit-learn, Flask

Languages: Python, C++, C, JavaScript, JAVA

Vector Database: MongoDB, Chroma

Development Tools: Anaconda, Jupyter Notebook, VSCode, Git

Database: Snowflake, Amazon-S3, MySQL

EXPERIENCE

Principal Architect AI/ML | Byteridge | 09/2024 to present

- Lead the development and execution of AI/ML strategies aligned with organizational objectives.
- Collaborate with product management, operations and sales to align initiatives with customer expectations.
- Mentor and develop team members, fostering a culture of continuous learning within the team.
- Communicate with non-technical stakeholders, influencing decision-making at the executive level.

Machine Learning Consultant | Dataworkz | 03/2024 to 08/2024

- Created state-of-the-art RAG Evaluation framework using LLM-as-a-Judge.
- Development of RAG-based QA system using fine-tuned finance embedding models.
- Web-based Text-To-SQL system enabling natural language queries to retrieve data from structured database.

Graduate Research Assistant | Colorado State University | 01/2017 to 05/2023

- Developed and published a novel neural network pruning technique, achieving significant compression with minimal accuracy loss.
- Conducted research in UAV target tracking using POMDP, contributing to advancements in autonomous systems.
- Served as an appointed tutor, teaching advanced mathematical concepts to engineering students.

Graduate Teaching Assistant | Colorado State University | 08/2022 to 05/2023

- Conducted classes on mathematical topics essential for understanding core concepts in engineering.
- Responsible for conducting the course end to end, creating content, teaching and grading assignments.

Course Assistant | Colorado State University | 08/2014 to Present

- Grader for graduate courses, ECE514-Application of Random Processes and ECE520-Optimization Methods.

Senior Software Engineer | Nokia, Bangalore, India | 03/2006 to 09/2011

- Led cryptography projects, including end-to-end development of OSCP and authentication frameworks.
- Directed defect management and mentoring initiatives, ensuring high-quality deliverables and knowledge transfer within teams.

Principal Software Engineer | Network Security Solutions MSC Sdn Bhd, Kuala Lumpur, Malaysia | 03/2003 to 01/2006

- Spearheaded the development of Xecure Message Service, focusing on secure LAN frameworks and mobile device encryption.

GenAI/ML PROJECTS

RAG-Based QA System

- *Overview:* Developed a RAG based QA system for pdf documents.
- *Technology:* Multi-vector retrieval, top-k similarity search, bi- and cross-encoder retrieval. Implemented in Python using LangChain. Embedding vector used was Chroma.

Blog: [End-To-End RAG Building](#)

RAG Evaluation Framework

- *Overview:* Evaluation method using LLM-as-a-Judge that provides a measurable metric.
- *Technology:* Implemented in Python using Prompt Engineering based on the concept of LLM-as-a-Judge.
- *Evaluated performance* against BLEU, ROUGE and BERTScore. Benchmarked results against public datasets.

Blog: [Dataworkz RAG Builder: Evaluation Framework](#)

Github: [RAG Evaluation Framework](#)

Text-To-SQL System

- *Overview:* Web-based product enabling natural language queries to retrieve information from an SQL database.
- *Technology:* Python, Llamaindex, Flask, HTML, Pandas, Snowflake and OpenAI.
- *Innovations: Plot Generation:* LLM-based generation of plots. *Sanity Checks:* Conflict resolution for values referencing multiple columns or datasets. *Dynamic Glossary:* Used RAG to include domain-specific vernacular.

Neural Network Pruning

- *Overview:* Developed a novel method for pruning neural networks.
- *Technology:* TensorFlow using custom callbacks and a custom model. Scikit-learn, pandas, matplotlib and Keras.
- *Achievements:* Published a first author research paper and achieved 70-80% network compression.

Github: [Network Pruning](#)

Anomaly Detection

- *Overview:* Applied advanced techniques for detecting anomalies in time-series and categorical data.
- *Techniques:* Some of the methods applied were; Isolation Forest, ARIMA, Logistic Regression, K-Nearest Neighbor, Support Vector and Decision Tree Classifier.

Github: [Anomaly Detection](#)

EDUCATION

PhD in Electrical Engineering (Machine Learning), Colorado State University, Fort Collins (Expected Dec 2026)

Master Of Science in Electrical Engineering, Colorado State University, Fort Collins

Bachelor of Engineering, Computer Science, University of Pune, India

PUBLICATIONS

Ganguli, Tushar, Edwin K. P., Chong. "Activation-Based Pruning of Neural Networks". Algorithms 17. 1(2024), [Paper](#).

CERTIFICATIONS

GenAI

Building and Evaluating Advanced RAG, Jan 2024

Finetuning Large Language Models, Nov 2023

Building Systems with the ChatGPT API, Sept 2023

Machine Learning

NLP with Classification and Vector Spaces, Jun 2023

ChatGPT Prompt Engineering, Sept 2023

Deep Learning (Specialization), July 2020

AWARDS

Nokia - Award for project management excellence (2008), Critical project delivery (2007)

Network Security Solution - Letter of commendation for flagship product delivery (2005)