

GURUPRASANNA RAJUKANNAN SURESH

+1 (548) 333-0491 | grajukan@uwaterloo.ca | LinkedIn: GuruprasannaRS | GitHub: GuruprasannaRS

TECHNICAL SKILLS

Programming: Python, SQL, C++

ML & DL: PyTorch (LoRA, QLoRA, Optuna Optimization), TensorFlow, Scikit-Learn, OpenCV

LLM & NLP: Hugging Face Transformers, LangChain, LlamaIndex, OpenAI API, SpaCy, NLTK

Data & Analytics: NumPy, Pandas, Tableau, Matplotlib, Seaborn

Infra & Deployment: Docker, FastAPI, MLflow, Redis, AWS, SageMaker, Azure AI, CI/CD, Celery

EXPERIENCE

UN-Habitat - Quality of Life Initiative

Jul 2024 – Jul 2025

AI Software Engineer

Toronto, ON, Canada

- Architected **ReAct agent toolkit** executing dynamic SQL and semantic retrieval with **sub-30-second** response times
- Built **LangGraph multi-agent system** with **Llama-3.3-70B** routing between case-study, law, and web-search nodes
- Created **WebSocket streaming interface** showing real-time **LLM agent** reasoning visibility for 20+ UN admins
- Built ingestion pipeline with **PGVector** and **MapReduce** processing 3000-character chunks with keyword extraction
- Implemented **Redis-Celery pipeline** on AWS ECS reducing document processing from **1-hour to 15-minute** batches

X-Care

Sep 2023 – Dec 2024

Machine Learning Engineer (Volunteer)

Waterloo, ON, Canada

- Built two-stage fracture detection system: **EfficientNet** transfer learning (94.3% accuracy) + **YOLOv8** localization
- Fine-tuned **YOLOv8** for fracture localization achieving **IoU >0.85** on X-rays, **IoU 0.75-0.78** on MRIs
- Optimized **PyTorch** training pipeline using **Optuna** hyperparameter tuning, reducing training time by **60%**
- Implemented **MLflow/DagsHub** versioning pipeline managing 10+ model runs with automated deployment tracking
- Preprocessed **15K+** medical images with data augmentation and balanced sampling for robust model training

HolisticMindAI

Apr 2024 – Jul 2025

AI Developer (Volunteer)

Kitchener, ON, Canada

- Implemented **speaker diarization** with **WhisperX** large-v3 and **PyAnnote**, separating speakers using 1.5 s threshold
- Led backend with **FastAPI** endpoints and **AWS Bedrock Mistral-8x7B**, enabling scalable therapy platform delivery
- Engineered **LlamaParse** and **spaCy** pipeline, generating **384-dim embeddings** for semantic document search
- Built **RAG pipeline** with **LlamaIndex** hybrid search, evaluation showed recall improved from 68% to 92%

Region of Waterloo (Smart Waterloo Region Innovation Lab)

Sep 2023 – Aug 2024

MLOps Engineer (Co-op)

Kitchener, ON, Canada

- Fine-tuned **Mistral 7B** with **LoRA** and deployed **GGUF** model to Hugging Face for lightweight inference
- Built **LLM-powered Q&A system** using **RAG** for school policy management, deployed across **5+ school boards**
- Implemented function calling and agentic workflows achieving **BLEU score of 0.85** for Q&A accuracy evaluation
- Engineered automated **CI/CD pipeline** with dynamic ports, auto-versioning, and containerized deployments

Multiversal Automation Private Limited

Jan 2022 – Oct 2022

Automation Engineer

Chennai, India

- Programmed **10-station automated assembly line** with **Yaskawa robot**, reducing cycle time from **20 to 2.5 mins**
- Implemented **XGBoost predictive model** on tool sensor data, extending tool life by **25%** via replacement scheduling

Tube Investments Optoelectronic Solutions

Feb 2020 – Dec 2021

Project Engineer

Sricity, India

- Built **LabVIEW sensor pipelines** with MySQL database, automating data collection from 50+ machines via TCP/IP
- Processed **real-time machine data** to detect anomalies, preventing **12+** equipment failures and optimizing schedules

PROJECTS

Translating NLI: Cross-lingual Classification Performance Analysis

- Fine-tuned **RoBERTa** for multilingual NLI on FEVER dataset, achieving **83.4% accuracy**.
- Built **Seq2Seq** English-French translation pipeline with **0.6 BLEU score** using transformer integration.

EDUCATION

Master of Engineering, Electrical and Computer Engineering Co-op

Jan 2023 — Aug 2024

University of Waterloo, ON, Canada

GPA - 3.9 / 4

Courses: Computational Intelligence, Data Modeling & Deep Learning, NLP, Image Processing, Statistical Modelling