# Darshan Patel

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## EXPERIENCE

**Collaborative Agile Project in Computer Vision**
- Contributed to the successful execution of an Agile Computer Vision project under faculty supervision.
- Leveraged Agile methodologies and tools like Jira and Git to streamline team collaboration and ensure efficient task management.
- Operated in isolated Git branches to manage individual contributions, ensuring clear code versioning, and tracking team progress.
- Applied Computer Vision (CV) libraries such as OpenCV to solve image and video processing tasks, enhancing the model's ability to analyse and interpret visual data.
- collaborated with two engineers and a data scientist, conducting regular meetings to discussing progress, planning upcoming tasks, and ensuring open communication and teamwork.

## PROJECTS

**Math score prediction application | Python, Docker, FastAPI, AWS ECR & EC2, Azure | GitHub**
- Developed a regression model to predicts student math scores based on multiple factors.
- Designed the project structure, conducted data analysis, selected features, and split data to improve model performance by almost 90%.
- Optimized Docker image size from 6GB to 4GB by excluding unnecessary files, reducing deployment time, and enhancing production efficiency.
- Gained hands-on experience deploying the model with Docker and FastAPI on AWS EC2 via ECR and Azure for real-world applications.

**Network Security | Python, MongoDB, Docker, AWS ECR & EC2, AWS S3, CI/CD, ETL Pipelines | GitHub**
- Created and deployed an end-to-end phishing URL classification system leveraging machine learning. The system achieved a 95% accuracy rate in detecting malicious URLs.
- Implemented robust exception handling and logging for smooth operation and reduced debugging time by 80%.
- Automated 100% of the ETL processes and deployed an automated pipeline from data ingestion to deployment. Enabled the seamless processing of 300K phishing URL records, significantly reducing manual intervention.
- Obtained hands-on experience with MongoDB, ETL pipelines, data validation, and CI/CD workflows while deploying on AWS with Docker, ECR, EC2, and S3, optimizing the project for scalability and real-world applications.

**Chatbot | LangChain, Langsmith, GPT, Llama 3.2, Python, FastAPI, Streamlit | GitHub**
- Designed and implemented a chatbot architecture using LangChain, combining GPT (paid) and open-source models like Llama 3.2 for context-aware response generation.
- Built and tested the chatbot locally, integrating it with an API for real-time interaction.
- Enhanced skills in chatbot development.

**Retrieval-Augmented Generation (RAG) System | LangChain, Python, Chroma DB, FAISS, Lance | GitHub**
- Integrated an end-to-end RAG system for efficient document retrieval and query answering using vector stores and similarity search. Mastered the use of various databases such as Chroma, FAISS, and Lance.
- Integrated LLMs for generation-based answers, utilizing prompt templates for structured responses, and improving accuracy with retrievers (VectorStoreRetriever).
- Engineered modular LangChain workflows, automating document retrieval and response generation with retrieval chains to enhance LLM performance and reduce hallucinations.

## SKILLS

Programming Languages: Python, SQL

Machine Learning & Statistics: pandas, NumPy, statsmodels, scikit-learn, XGBoost, CatBoost, Matplotlib, Seaborn, MLflow, DagsHub

DevOps & Cloud: Git, GitHub, Docker, FastAPI, AWS, Azure, GCP

Generative AI (GenAI): LangChain, TensorFlow, Hugging Face, Ollama, Groq, OpenAI

Agentic AI: LangGraph, LangSmith, CrewAI

## EDUCATION

**Durham College**                                                                                      **September 2024 - Present**
*Major: Artificial Intelligence Analysis, Design, and Implementation*                    *Oshawa, Ontario*
**GPA: 4.9/5.0**

## CERTIFICATIONS

- Machine Learning Specialization (Stanford, DeepLearning.AI)
- Complete Data Science, ML, DL, NLP Bootcamp (KRISHAI Technologies, Udemy)
- ML & Intermediate ML (Kaggle)
- Statistics (Stanford, Coursera)
- Python Programming (Softech)