Arlo Heinrich Steyn

Data Scientist and MLOps Engineer

Contact

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Location
Western Cape, South Africa

Portfolio Website
https://portfolio-website-arlo-steyn-v1.vercel.app/

Check it out!

Skills

- Core Programming & Data Handling
- Data Analysis & Visualization
- Machine Learning & AI
- Deep Learning & Neural Networks
- MLOps & Production Systems
- Cloud Computing & Infrastructure
- Natural Language Processing
- Advanced Analytics & Research
- Software Engineering & Web Development

Language

English

Afrikaans

Education

Stellenbosch University
2021-2025

Bachelor of Data Science
(BDatSci) with a focal area in Computer Science

Midstream College
Matric - 2020

IEB Matriculant
6 Distinctions
84% Average

The Code Academy
Completed 2023

Full Stack Engineer
Professional Certification: Web Development Foundations, Building Interactive Websites, Front-End Development, Back-End Development, Full-Stack Development

Description

Python, R, SQL, Git, and Linux for data wrangling and database management.

Proficient in Pandas, NumPy, Matplotlib, Seaborn for EDA and visualizations.

Expert in Scikit-learn, TensorFlow, PyTorch for regression and classification.

Skilled in CNN, RNN, Transformers, LLM fine-tuning, and SHAP.

Proficient in MLflow, Airflow, Docker, CI/CD, and model monitoring.

Experienced in Azure DevOps, PostgreSQL, and Amazon Bedrock.

Proficient in BERT, GPT, HuggingFace, LoRA, and spaCy.

Use clustering, time series, and A/B testing for deep insights.

Develop secure full-stack apps with React, Node.js, and databases.

About Me

For more information about me, my career and in-depth descriptions of main projects (plus other projects), feel free to visit my hosted portfolio website: https://portfolio-website-arlo-steyn-v1.vercel.app/

Featured Projects

Below is a selection of my own personal and university projects.

MLOps Engineering

- Thesis Project
- CI/CD | Apache Airflow | Azure Devops
- Date: 2025

Self Healing ML Pipeline

Led a 3-person team to develop an autonomous self-healing machine learning pipeline for retail demand forecasting using Dunnhumby's dataset. The system integrated LSTM, XGBoost, and Random Forest models with ensemble learning, anomaly detection (LSTM autoencoders, drift tests, FGSM), and explainable AI (SHAP, LIME). It featured automated retraining, synthetic data generation, and robust MLOps integration using MLflow, Apache Airflow, and Azure DevOps. Key outcomes included improved forecast accuracy, reduced manual intervention, and scalable CI/CD deployment for real-world retail environments.

NLP, Data Science

- Data Science Project
- NLP | LLM Fine-Tuning | Optimization
- Date: 2024

Fine-Tuning of a 3B Parameter Mode

Fine-tuned Meta's LLaMA-3.2-3B model on 39,668 Q&A pairs from Cross Validated to create a domain-specific AI assistant for machine learning and data science queries. Used LoRA for parameter-efficient training and UnSloth for optimized performance on limited hardware (Kaggle GPUs), with 4-bit quantization and gradient accumulation. Developed two models—one for breadth and another for depth—demonstrating quality-over-quantity advantages. Led ethical web scraping, advanced data wrangling, and transformer-based fine-tuning to build accurate, resource-efficient NLP systems.

Data Science

- Data Science Project
- ML | Risk Prediction | Real-World AI
- Date: 2024

Lung Cancer Risk Prediction for Early Detection

Built a lung cancer risk classification system using ML models like Ridge Regression and Random Forest, achieving 96%+ accuracy with zero critical false negatives. Focused on healthcare accessibility in underprivileged regions, the system uses a simple questionnaire to enable early detection without costly equipment. Applied EDA, feature engineering, regularization, and hyperparameter tuning with extensive cross-validation. Designed for real-world deployment in rural South African clinics, offering a cost-effective, life-saving screening tool.

Software Development

- Computer Science Project
- Java | VoIP | Secure File Transfer | Systems Engineering
- Date: 2025

Secure VoIP and File Sharing Desktop Platform

Developed WhatsDown, a secure Java-based desktop platform for real-time chat, voice calls, and encrypted file sharing using a hybrid client-server and peer-to-peer architecture. Integrated TCP for control logic and UDP with a custom RBUDP protocol for low-latency media transfer. Implemented RSA encryption, multithreading, and JavaFX UI, with H2 database and HikariCP for persistence. The system supported 66 concurrent users, sub-second voice latency, and peak file transfer speeds of 10.97 MB/s, demonstrating advanced skills in Java, networking, GUI, encryption, and performance optimization.

Full-Stack Web App

- Computer Science Project
- Full-Stack Web App | Real-Time Collaboration | Markdown Editor
- Date: 2023

Real-Time Collaborative Note-Taking App

Built Fusion, a full-stack collaborative note-taking web app supporting real-time markdown editing and sharing. Used React.js, Tailwind CSS, Node.js, Express, and GraphQL with WebSocket for live synchronization, and PostgreSQL for persistent storage. Implemented JWT authentication, password hashing, and secure data validation. Enabled seamless user collaboration with features like live editing, note sharing, and category-based search. Gained experience in secure web architecture, real-time systems, and full-stack development in a 6-member team.