SAVINDI WIJENAYAKA

Machine Learning Engineer & Researcher

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Summary

Machine Learning Engineer and Researcher with 2+ years of industry experience developing and deploying scalable deep learning systems in cloud-native environments. PhD (submitted) from the University of Auckland, with research spanning medical imaging, deep learning, applied mathematics, and computational analysis. Brings 6+ years of experience in Python, along with extensive work across modern ML frameworks, containerisation, orchestration, and CI/CD pipelines. Focused on translating research into robust, real-world AI solutions.

Experience

Machine Learning Engineer

WSO2 · **Full-time**   📅 Sept 2020 - Nov 2021   📍 Colombo, Sri Lanka

WSO2 is one of the world's leading open-source integration vendors. Choreo is its latest product, providing an AI-enhanced integrated platform as a service.

- Researched, developed, and deployed phase 1 of Choreo's AI Test Assistant service end-to-end, including dataset creation via XML/OpenAPI scraping, iterative hypothesis testing, and model development using Python, Keras, and GPT-based experimentation for natural language understanding. Built the infrastructure with Flask, Docker, Kubernetes, and Azure, incorporating CI/CD, unit tests, and OpenAPI compliance.
- Co-architected and implemented Choreo's AI Anomaly Detection system using Azure Stream Analytics, Event Hubs, SQL, and Function Apps; led the design of the alerting pipeline, including suppression policies and metric correlation.
- Automated Choreo's performance testing by building a Python library and Azure DevOps pipeline for system metrics collection and analysis, improving observability, and supporting data collection for ML models.
- Diagnosed and resolved a critical memory leak in the Ballerina Language Server using JMeter and Eclipse Memory Analyser (MAT), which helped in the optimisation of resources in Choreo.

Software Research Engineer

Pearson · **Internship**   📅 Sept 2018 - Sept 2019   📍 Colombo, Sri Lanka

Pearson is a leading Education provider, offering curriculum materials, multimedia learning tools, and testing programs to help educate people worldwide.

- Researched and implemented deep learning modules for emotion detection and speech analysis in the AI-based Public Speaking Evaluator Service, using Keras, Kaldi, and OpenCV. Integrated models into RESTful services (Flask, later Django) and automated deployment via Ansible for scalable real-time evaluation.
- Examined Question Answering and Machine Comprehension to build a Q&A chatbot service for Pearson's educational content, using AllenNLP and BiDAF, later extending it with fine-tuned BERT and GPT-2 models, exposing the service via a Django REST API and automated deployment using Ansible.
- Investigated and developed a flashcard classification service using ULMFiT, LSTM, and GRU to automatically categorise flashcards created by students or the system, deployed via Django REST framework.
- Evaluated and tested NoSQL and relational database migration strategies (MongoDB, MSSQL, MySQL) and conducted performance testing on ScaleOut State Servers within AWS EC2 environments.

Education

Ph.D. in Bioengineering (submitted)

University of Auckland   📅 Dec 2021 - May 2025   📍 Auckland, New Zealand

A deep learning centred computational framework was developed for automated 3D gastric microstructure analysis, integrating biomedical imaging, model-based tissue segmentation, and downstream computational quantification to enable scalable, reproducible anatomical assessment and modelling.

- Engineered a semantic segmentation model to distinguish gastric tissue layers, integrating multiscale channel and spatial attention concepts, implementing numerous ablation studies, and saving over 40 hours per dataset.
- Developed a robust three-dimensional gastric tissue quantification framework using advanced mathematical techniques in Python; delivered precise measurements from 20+ tissue samples, establishing the first benchmark for future research.
- Developed a comprehensive computational model compiling crucial geometric information alongside quantification details sourced from 8 distinct experiments, enabling future in-silico experiments.
- Conducted biological experiments to collect and prepare rodent stomachs for micro CT imaging, resulting in a streamlined process that enhanced sample quality and consistency across 15 experimental trials.

B.Sc. (Hons.) in Software Engineering

University of Kelaniya　　　📅 Feb 2016 - Mar 2020　　　📍 Kelaniya, Sri Lanka

- Specialised in Data Science and Net-centric application development.
- Attained a GPA of 3.96 out of 4.00, obtaining a First Class.

Technical Skills

- **Knowledge Areas:** Deep Learning (Computer Vision & Natural Language Processing)
- **Languages & Frameworks:** Python (Pytorch, Keras, Flask, Django), Java (Spring Boot), Ballerina, Bash
- **Backend & APIs:** RESTful APIs, gRPC, Event-Driven Integration
- **Databases & Data Handling:** Kusto Query Language (KQL), MongoDB, MSSQL, MySQL, ADX, DVC
- **Cloud Platforms & DevOps:** Azure, Kubernetes, Docker, CI/CD, AWS, Ansible, Linux
- **Tools & Methodologies:** Git, Agile, Performance Monitoring (Seaborn, Plotly, JMeter), Debugging (Eclipse MAT), Analysis (Numpy, Pandas), Testing (Unittest)

Knowledge Sharing & Technical Outreach

- Member of the teaching team for Code In Place 2021, an online Python course offered by Stanford University, contributing to global tech education initiatives.
- Served as a guest speaker for multiple technical webinars (organized by IEEE and DeepLearning.AI), effectively communicating complex deep learning topics to broader audiences.
- Authored technical articles on Medium covering conceptual topics (CNNs, Kubernetes internals, JVM), practical applications of cloud-native microservices (Kubernetes, Docker, Azure), and automated CI/CD pipelines (GitHub Actions, Azure ARM templates), demonstrating a passion for knowledge sharing.

Achievements

- **1st Place (2022)** and **2nd Place (2024)** in the international SPARC FAIR Codeathon, representing the University of Auckland, organised by the SPARC Data and Resource Centre and the NIH.
- **4th Place** in DataStorm 2020 Datathon, organised by Octave (JKH) and University of Moratuwa.
- **1st Runner-Up** in National Youth Software Competition 2017, organised by UNDP Sri Lanka.
- **Dean's List Honouree**, recognised in all four academic years of the B.Sc. programme.
- **Vice President** of Marketing & Communications at AIESEC in the University of Kelaniya in 2018, contributing to local chapter growth.