

# 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 (under examination) 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 (under examination)

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.
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## 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

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- **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

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- 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

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- **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.