DHRUV SALOT

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Education

University of New South Wales (UNSW), Sydney, AU — Sept 2024 – Aug 2026 (Expected)
Master of Science Data Science (Computational Data Science) — WAM 82.36/100
Concentration: Machine Learning and Analytics

Dwarkadas Jivanlal Sanghvi College of Engineering, Mumbai, IND — Aug 2020 - Aug 2024
Bachelor of Technology Computer Science (Data Science) — CGPA 9.21/10
Concentration: AI & ML, Foundations of Data Science

Certifications

AWS Academy Data Analytics — Amazon Web Service
- Evaluated large datasets using AWS Athena, Glue, and QuickSight to generate actionable insights with Tableau. 2023

AWS Academy Data Engineering — Amazon Web Service
- Built and optimised cloud ETL pipelines using AWS Glue, Redshift, and Lambda for scalable data workflows. 2023

AWS Academy Cloud Architecting — Amazon Web Service
- Structured scalable, fault-tolerant AWS solutions using Well-Architected Framework best practices. 2023

AWS Academy Cloud Foundation — Amazon Web Service
- Gained proficiency in AWS core services, cloud security, and infrastructure aligned with Cloud Practitioner standards. 2022

Experiences

Anti-Phishing QR Scanner [Google Play] — Oct 2023 - July 2024
Atomic Asher LLP | ML Engineer — Sydney, AU
Skills & Tech: Python, TensorFlow, NumPy, Pandas, SQL, NLTK, Expo JS
- Implemented machine learning classifiers (**Random Forest**, **XGBoost**) trained on **8,000**+ labelled URLs, extracting **lexical features** such as domain age, URL length, special character ratio achieving **94% accuracy** in detecting malicious and phishing URLs embedded within QR codes.
- Validated the anti-phishing pipeline across **500 test** QR samples, achieving **96% Precision**, **93% Recall**, and **0.95 F1-Score**, confirming the system's detection reliability against zero-day phishing attacks and obfuscated malicious URLs.

Automated Detection of Cholelithiasis in MRI DICOM Images Using CNN — May 2023 - Nov 2023
Nanavati Max Hospital | Research Intern | Guided by Dr. Kriti Srivastava — Mumbai, IND
Skills & Tech: Bee DICOM, Python, Tensorflow, Image Processing, CNN, Matplotlib
- Applied **DICOM-**specific preprocessing techniques such as **windowing, pixel intensity normalisation, and metadata extraction** across 500+ MRI patient scans, reducing image noise by 30% and ensuring standardised input quality for model training.
- Implemented CNN architectures (**ResNet-50**, **U-Net**) with data augmentation on 3,000+ annotated DICOM slices, achieving **92% accuracy** in autonomously detecting and localising Cholelithiasis gallstone formations across MRI images.
- Validated the model against radiologist-confirmed ground truth across 200+ test cases, yielding **95% Sensitivity, 93% Specificity, and 0.96 AUC-ROC**, confirming diagnostic reliability for clinical deployment.

AI-Powered Document Discrepancy Detection Engine — July 2021 - June 2022
ICICI Prudential | AI-ML Intern — Mumbai, IND
Skills & Tech: Python, The Fuzz, Spacy, NLTK, Scikit Learn
- Revamped an automated trade document validation system using OCR and machine learning to cross-validate unstructured documents against Letter of Credit (LC) terms, eliminating manual review processes.
- Implemented **FuzzyWuzzy** and **Levenshtein Distance** algorithms for string matching in trade documents, achieving **95%**+ accuracy in detecting Applicant and Beneficiary name discrepancies.

Key Projects

Crop Pest Detection [Google Colab] Computer Vision

Course Project | Guided by Prof. Erik Meijering UNSW

Skills & Tech: Faster RCNN, SHAP (SHapley Additive exPlanations), LIME (Local Interpretable Model-agnostic Explanations)

- Modelled a crop pest object detection system using transfer learning on Faster R-CNN with ResNet50-FPN and MobileNet V3 Large FPN backbones using PyTorch, fine-tuned across 4 progressive training experiments on a multi-class agricultural pest dataset while systematically evaluating backbone architecture, image preprocessing (RGB vs. grayscale), and data augmentation strategies including **ColorJitter, Gaussian Blur, and ElasticTransform** to optimise detection performance.
- Implemented Explainable AI (**XAI**) techniques using **EigenCAM** and **AblationCAM** from the pytorch-grad-cam library on a Faster R-CNN backbone, generating **Class Activation Maps** (CAMs) using LIME & SHAP Algorithms to visually interpret model attention during pest localisation, demonstrating applied knowledge of model interpretability and responsible AI practices in computer vision systems.

Web Server Log Analysis [Github] Big Data Engineering

Course Project | Guided by Dr. Kriti Srivastava DJSCE

Skills & Tech: Docker, Python, Faust, Apache (Kafka, Pinot & Superset), Elastic (FileBeat), PowerBI, Business Insights

- Designed and pioneered a containerised real-time log streaming infrastructure across 5 Docker services, integrating Filebeat, Apache Kafka, and Apache Pinot to ingest and store **10,000+ structured web access** log events per second, sustaining reliable pipeline throughput across multi-day continuous testing cycles exceeding **100M+ events processed**.
- Built a real-time log enrichment and anomaly detection system processing **9,000+ events/second** through Apache Faust into Apache Pinot, surfacing DDoS indicators: IP-level request floods and HTTP status code anomalies, in a live Superset & PowerBI dashboard with **sub-3-second latency**.

Autonomous Mountain Flight Agent via PPO & Academic Learning Reinforcement Learning

Capstone Project | Contributors: **Dhruv Salot**, Vrinda Jikadra, Dev Shah DJSCE

Skills & Tech: Reinforcement Learning (RL) Algorithms, C Sharp, Unity 3d, ML Agents.

- Developed novel curriculum-based RL framework using **Proximal Policy Optimisation** (PPO) algorithm to train autonomous agents in **Unity 3D** environment, leveraging customised **ML-Agents** workflow for Mac OS, implementing progressive reward system that reduced training time by **35%** and improved convergence rate by **40%** compared to traditional RL methods.
- Designed and deployed deep reinforcement learning model for autonomous flight navigation in physics-driven gaming environment with 50+ dynamic obstacles and complex terrain, utilising lidar-based observation space with **20+ ray tracings** and continuous action space achieving **85% successful navigation rate**.
- Performed hyper parameter tuning across 15+ parameter configurations and conducted quantitative performance analysis of reinforcement learning models, Assessing impact of 5-stage graduated reward complexity on agent learning efficiency and demonstrating **30% improved adaptability** through **academic learning** approach inspired by human skill acquisition.

Positions

UNSW Computer Science Society Jan 2024 - 2025

Volunteer Sydney, AU

- Volunteered at the UNSW Computer Science Society (CSESoc), contributing to the planning and execution of technical workshops and supporting day-to-day administrative and operational functions to facilitate a smooth experience for the student community.

DJS Society for Data Science Jan 2020 - 2022

Core Committee Member Mumbai, IND

- Super headed the organisation of SkyJack, a state level Datathon attracting 200+ participants, coordinating end to end logistics, participant outreach, and event execution to deliver large scale competitive Data Science experience.
- Mentored 15+ teams at an institute-level Hackathon (Xtract 2.0), guiding participants in integrating AI/ML technologies including Convolutional Neural Networks (CNN), Artificial Neural Networks (ANN), Reinforcement Learning (RL), and large language models such as GPT-4, Gemini 1.5 Pro, LLaMA 3, and CLIP, while assisting teams in building end-to-end data pipelines and deploying workflows into web applications, resulting in one mentored team securing 1st place.