Shounak Desai

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Summary

Motivated Machine Learning Engineer with expertise in building scalable AI-driven solutions, Generative AI models (VAEs, GANs, DDPM), Computer Vision systems, and data pipelines. Proficient in designing AI automated systems, implementing Advanced Data Analysis, and deploying MLOps frameworks for seamless model integration. Skilled in statistical modeling, ETL processes, and delivering actionable insights.

Education

Rochester Institute of Technology — Rochester, NY
Master of Science in Computer Science (Specialization: Artificial Intelligence) — *Aug 2022 - Dec 2024*

Pune Institute of Computer Technology (PICT) — Pune, India
Bachelor of Engineering in Electronics and Telecommunications — *June 2016 – May 2020*

Work Experience

Research Assistant — May 2023 - Present
Computational Biomedicine Lab - RIT — *Rochester, NY*

- Engineered a Domain Adversarial Neural Network (DANN) using PyTorch on simulated and clinical ECG datasets, achieving a **58% accuracy**—a substantial improvement over the 30% baseline for Arrhythmia detection.

Machine Learning Engineer — Aug 2020 - July 2022
Vodafone Intelligent Solutions (VoIS - Vodafone Group) — *Pune, India*

- Designed and implemented **end-to-end ML Automation pipelines** using Scikit-Learn, Docker, GCP tools, and Apache Airflow, advancing MLOps practices within the team.
- Constructed ETL pipelines and applied AI/ML models with statistical analysis using Python, Pandas, and Apache Spark for large-scale data processing.
- Led the development of an **Optical Character Recognition (OCR)** system using Tesseract, PostgreSQL, Docker, and SAP Cloud, by providing clients with Flask based RESTful APIs.
- Optimized GCP service utilization by strategically advising on cost-effective solutions, enhancing the department's cloud efficiency.

Projects

Offside detection in Soccer using Single Camera | *Python, OpenCV, PyTorch* — Jan 2024 – April 2024

- Pioneered a novel offside detection system utilizing a single camera, reducing the need for 10-30 traditional cameras by **90-97%**, thereby significantly lowering hardware costs and complexity. **Github**
- Leveraged pretrained model for precise **Keypoint Estimation**, employing vanishing point techniques to construct accurate 3D offside lines using Hough Lines in 3D space.

Central Platform Engine (CPE) Terminals Automation | *Python, GCP Services* — Jan 2022 – June 2022

- Crafted multiple event-based notification APIs for the Vodafone Business Clients during the shifting of client business files from SAP Cloud Platform to GCP.
- Facilitated a seamless transition from SAP to GCP, ensuring uninterrupted client operations and minimizing downtime. Used **GCP Pubsub, Cloud Run and Cloud Functions** services for this automation project.

SOX Compliance Automation Pipeline | *Python, NLP, GCP, Apache Airflow* — Jan 2021 – Jan 2022

- Automated the work of 25-30 full-time employees at Vodafone Group, **saving $350k-$800k** in revenue by developing an end-to-end binary classification NLP pipeline.
- Deployed the XGBoost NLP model on GCP Cloud Composer utilizing Scikit-Learn, Apache Airflow and Google Cloud Storage delivering an end-to-end automation pipeline with **88% accuracy.**

Technical Skills

Languages and Tools: Python, Java, C++, R, Shell scripting; SQL, NoSQL, PostgreSQL, MongoDB, Apache Spark
ML Frameworks & Libraries: PyTorch, TensorFlow, Scikit-Learn, Numpy, Pandas, Matplotlib, NLTK, OpenCV
Cloud & DevOps Tools: Google Cloud Platform (GCP), MLFlow, Apache Airflow, Docker, Flask, Git; Generative AI expertise in VAEs, GANs, and Diffusion Models