RAHUL SANDIP DESHMUKH

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EDUCATION

Master of Science, Computer Science — Graduating May 2025
Arizona State University, Tempe, AZ — 3.93 GPA

Bachelor of Technology, Information Technology — May 2023
K.J. Somaiya Institute of Technology, University of Mumbai, India — 3.83 GPA

Relevant coursework: Data Structures and Algorithms, Statistical Machine Learning, Planning Learning methods in AI, NLP, Data-Intensive Systems for Machine Learning, Frontier Topics in GenAI, Computing for Data-Driven Optimization, Big Data Analytics, Database Management, Data Mining and Business Intelligence, Engineering Blockchain

TECHNICAL SKILLS

Programming Languages & Web Development: Python, R, Julia, Java, C, C++, JavaScript, HTML, CSS, Flask
Data Management & Big Data Technologies: MySQL, MongoDB, SSMS, DBeaver, Google BigQuery, NodeJS, Hadoop
Cloud Platforms & DevOps Tools: AWS (S3, SageMaker, EC2), Google Cloud Platform, Azure, Docker, Kubernetes, CI/CD, Agile, Git, CUDA, Unix/Linux
Machine Learning Libraries & Data Analysis: Pytorch, Torch Vision, TensorFlow, Keras, Numpy, Pandas, scikit-learn, diffusers, OpenCV, NLTK, Excel, Tableau, Power BI

EXPERIENCE

ASU Enterprise Partners, Tempe, AZ: Data Science Assistant — January 2024 – Present
- Leading the development of an **attribution model** for Sun Devil Athletics using **Python**, **Google BigQuery**, and **GA4 data**, integrating marketing data from multiple channels to enhance ticket sales and fan engagement strategies.
- Developed a **K-means clustering model** using **R** with **Mahalanobis distance** to segment alumni into 5 affinity groups and profile the clusters. Delivered detailed reports to stakeholders to enhance engagement strategies.
- Built and optimized a predictive model for donor propensity using **Bayesian optimization**, following **ETL processes** and conducting **EDA** to increase accuracy by **10%**. Shared insights with stakeholders to drive effective fundraising strategies.

K.J. Somaiya Institute of Technology, Mumbai, India: Internet of Things Intern — December 2021 – January 2022
- Prepared a prototype for an **Air Quality Monitoring System** including an automatic toilet flushing mechanism triggered by turbidity, achieving 40% greater system automation.
- Implemented a gas sensor integration to monitor ammonia and air quality, with **C++** on Arduino microcontroller and displayed real-time data on an **Android** application, enabling tracking and alert notifications.

ACADEMIC PROJECTS

3D VAE Developer – Vermilion: ASU's In-house Text-to-Video Generative Model — Fall 2024 – Present
- Initiated setup of **3D-VAE module** using **CogVideo's codebase** for foundational structure and early experimentation in high-quality video generation.
- Collaborated with **Data** and **Diffusion teams** to design model structure for efficient cascaded **spatial-temporal generation** across resolution scales.
- Conducted initial experiments addressing challenges in **semantic consistency** for extended video sequences, contributing to model refinement and development goals.

Harnessing Deep Reinforcement Learning for Autonomous Driving in CARLA — Fall 2023
- Designed an adaptive **autonomous driving agent** using **Deep Reinforcement Learning** in CARLA simulation environment.
- Employed a **Variational Autoencoder (VAE)** for feature extraction and **Proximal Policy Optimization (PPO)** for decision-making, achieving a mean reward of 92.3% in dry conditions and 78.5% in adverse scenarios.
- Optimized model performance by refining reward functions and limiting training to 3 million epochs, demonstrating **lane-keeping**, **obstacle avoidance**, and **precise navigation** across diverse scenarios.

Identification and Classification of Plant Leaf Diseases — Spring 2023
- Implemented **Generative Adversarial Networks (GANs)** to augment the plant leaf dataset, enhancing model performance by increasing data diversity. Used Labelimg for precise annotation of the dataset, ensuring accurate **model training**.
- Developed a YOLO v4-tiny object detection model for real-time detection of diseased leaves, achieving a 77.0% Mean Average precision (mAP). Enabled mobile-based detection made in Java to help farmers identify diseases and apply timely remedies.

PUBLICATION

- Deshmukh, R., Mayekar, V., Patel, S., & Rathod, M. (2023). Identification and Classification of Plant Leaf Diseases using YOLOv4-tiny Algorithm. 2023 6th International Conference on Advances in Science and Technology (ICAST), 352–357.