RAHUL SANDIP DESHMUKH

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EDUCATION

Master of Science, Computer Science   Graduating May 2025
Arizona State University, Tempe, AZ   3.83 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.