Rahul Sandip Deshmukh

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EDUCATION

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

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

Relevant Courses: 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, DataMining and Business Intelligence.

TECHNICAL SKILS

Databases: MySQL, MongoDB, SQL Server Management Studio (SSMS), DBeaver, NodeJS, BigQuery
Programming Languages: C, C++, Python, Java, JavaScript, R, Julia, HTML, CSS
Tools & Software: Git, AWS, Docker, CUDA, Tableau, Alteryx, Microsoft Office, Unix/Linux, Excel, CI/CD, Agile, DevOps, Kubernetes, Hadoop, Google Cloud Platform, Azure
Libraries: Pytorch, Torch vision, BoTorch, Stable-Baselines3, OpenCV, Tensorflow, Keras, Numpy, Pandas, scikit-learn, matplotlib, NLTK, spacy, seaborn

PROFESSIONAL EXPERIENCE

Data Science Assistant, ASU Enterprise Partners January 2024 – Present

- Collaborating on the development of **attribution models** for Sun Devil Athletics, using **GA4** and Ticketmaster data to understand fan engagement and optimize ticket sales.
- 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.

IOT Intern, K. J. Somaiya Institute of Technology (IT Department) December 2021 – January 2022

- Prepared a prototype for an **Air Quality Monitoring System** that included an automatic toilet flushing mechanism triggered by high water turbidity levels.
- 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 | Github 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%.**
- Optimized model performance by refining reward functions and hyperparameters, demonstrating effective lane-keeping, obstacle avoidance, and precise navigation in diverse driving scenarios.

Identification and Classification of Plant Leaf Diseases | Github 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.

CERTIFICATIONS & PUBLICATIONS

- 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.
- Certifications: **Fundamentals of Deep Learning** (NVIDIA), **Improving Deep Neural Networks: Hyperparameter Tuning, Regularization, and Optimization** (DeepLearning.AI).