PRITHVI SHIRKE

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EDUCATION

Master of Computer Science (Big Data Systems) **Expected May 2025**
Arizona State University, Tempe, Arizona **GPA: 3.94/4**
Relevant Courses: Digital video processing, Data visualization, Statistical machine learning, and Data mining.

Bachelor of Technology in Electronics Engineering **May 2022**
Veermata Jijabai Technological Institute, Mumbai, India **GPA: 3.20/4**

TECHNICAL SKILLS

Programming languages: Python, C++, Java, SQL, JavaScript, Kotlin, and Bash/Shell Scripting.
Tools & Framework: TensorFlow, PyTorch, Scikit-learn, Keras, NumPy & Pandas, OpenCV, CUDA, TensorRT, Docker, Kubernetes, Git, AWS, Matlab, Javascript D3, MongoDB, MySQL, Node.js, Flask, and React.
Areas of Expertise: Reinforcement Learning, Computer Vision, LLM, and Communication Skills.

PROFESSIONAL EXPERIENCE

Research Assistant (Data Mining and Reinforcement Learning Group) **| Arizona State University Jan 2024 – Present**

- Conducting research under Prof. Hua Wei, focusing on Intelligent Transportation systems, leveraging Computer Vision, Reinforcement Learning, and Large Language Models.
- **Currently leading a research project** in collaboration with the *Arizona Department of Transportation (ADOT).*

Software Engineering Associate | Telstra Global Business Services LLP | Pune, India Jul 2022 – Jul 2023

- Engineered the migration of Boost service into Telstra application utilizing JavaScript, Kotlin, React, and MySQL.
- Directed tasks and projects using Jira in an Agile methodology environment.
- Developed comprehensive Junit test cases, integrating with GitLab's CI/CD pipeline for testing and deployment.
- Gained experience with Bamboo, Bitbucket, Splunk, and Salesforce technologies.

AI and ML Developer Intern | Airpix Geoanalytics | Mumbai, India | demo Jul 2020 – Jul 2021

- Implemented real-time video analytics of vehicles using computer vision and deep learning.
- Utilized the SSD frameworks and Deepsort models for vehicle detection, classification and tracking.
- Created multiprocessing and a multithreaded system using python libraries.
- Implemented an asynchronous programming technique (async io) to write concurrent python codes.
- Optimized the code on Jetson Xavier Board using TensorRT for NVIDIA GPU inference.
- Deployed the solution through edge devices on Toll Plazas which **reduced the waiting time of the vehicles by 42%.**

PUBLICATION

"SynTraC: A Synthetic Dataset for Traffic Signal Control from Traffic Monitoring Cameras" **Prithvi Shirke**, Tiejin Chen, et, al. 27th IEEE International Conference on Intelligent Transportation Systems (**ITSC 2024**). [**paper**, **code**]

- Developed Python & PyTorch scripts in Carla (3D simulator) to manage a large-scale dataset for RL training.
- Designed a robust data pipeline, integrating object detection, lane classification, and RL models into the Simulator.
- This paper significantly advances **intelligent transportation systems** by introducing the **first image-based dataset** using a 3D simulator, bridging the gap between simulated and real-world traffic management.

PROJECT

Diffusion Models for Generative AI | presentation

- Delivered a presentation on diffusion models, highlighting their advantages over GANs in image synthesis, covering forward/reverse processes, classifier-free guidance, latent models, DALL-E2, and Imagen.
- Invested around **200 hours** of research to create a **1-hour video** that accelerates learning for newcomers.

Bank Security System | demo

- Implemented an object detection model through bank's CCTV, achieving **96.40% precision** in threat detection.
- Implemented LSTM with **91% accuracy** for pose estimation to detect unusual behaviors and unrestricted access.
- Improved bank security by **30%** in 3 months by analyzing incident reduction, threat detection rate, response time, customer complaints, and operational efficiency.

AI-Based Crop Recommendation App For Farmers | project

- Curated a comprehensive dataset for 30 crops, performed data cleaning, and feature extraction for training a machine learning model (ANN) in Python.
- Leveraged NodeJS to develop a bilingual (English and Hindi), user-friendly application.
- Deployed a Python Flask server on Oracle Cloud for real-time crop prediction.
- Recognized **top 10** in Gov-TechThon, an IEEE-organized virtual hackathon, for achieving **99.30% accuracy.**