

PRITHVI SHIRKE

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OBJECTIVE

Seeking spring full time opportunities starting from Jan 2025 in AI, ML and CV domain.

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, Statistical machine learning, Data Visualization, Blockchain & 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. ([SQL Certificate](#))

Tools & Framework: Tensorflow, PyTorch, Scikit-learn, Pandas, OpenCV, CUDA, TensorRT, Docker, Github, MongoDB, MySQL, Postgres, Node.js, Flask, Javascript D3, & React.

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 \(ADOT\)](#).
 - Developing **Prompt engineering** strategies using **LangChain** and **OpenAI** with **Python** in an augmented LLM.

Software Engineering Associate | Telstra Global Business Services LLP | Pune, India

Jul 2022 – Jul 2023

- Directed **10 tasks** and **3 projects** using Jira in an **Agile** methodology environment.
- Developed comprehensive **J-unit test cases**, integrating with GitLab's **CI/CD pipeline** for testing and deployment.
- Engineered the migration of "Boost" service into Telstra application utilizing **JavaScript**, Kotlin, React, and **MySQL**.

AI and ML Developer Intern | Airpix Geoanalytics | Mumbai, India | [demo](#)

Jul 2020 – Jul 2021

- Implemented real-time video analytics of vehicle detection and tracking using computer vision and deep learning.
- Developed **multiprocessing, multithreading and asynchronous** system using python libraries.
- Integrated a **real-time streaming service** on the **React** frontend, enabling live data visualization.
- Designed and implemented a **robust data pipeline using MongoDB** to efficiently store, manage, and retrieve data.
- Optimized CV models with **OpenCV**, **CUDA**, **TensorRT** for deployment on **NVIDIA Jetson Xavier edge device**.
- 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**, Tiejun 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 agent** training.
- Designed a robust data pipeline, integrating object detection, lane classification, and RL models into the Simulator.
- Containerized traffic AI app with **Docker**; documented on **GitHub**; shared dataset on **Hugging Face**.
- 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

Bank Security System | [demo](#)

- Implemented a custom trained **weapon detection model** (Yolo-v5) using **Tensorflow**, **Jupyter Notebook**, & **CUDA**.
- Implemented **LSTM** with 91% accuracy for **pose detection** to detect unusual behaviors and unrestricted access.
- Improved bank security by **30%** by analyzing incident reduction, threat detection rate, & response time.

Diffusion Models for Generative AI | [presentation](#)

- Delivered a presentation on diffusion models, and highlighted their advantages over GANs in image synthesis.
- Invested around **200 hours** of research to create a **1-hour video** that accelerates learning for newcomers.

AI-Line Following Robot and Mazesolver

- Explored the maze and stores its trajectory in an **esp32** microcontroller with a customized algorithm to act smartly.
- Modelled a maze solver program using **C++** that extracts maze data and finds the shortest path between 2 points.
- Implemented Depth First Search Algorithm for Pathfinding. Won the **2nd price** in the competition.

AI-Based Crop Recommendation App For Farmers | [project](#)

- Curated a dataset for crops, performed data cleaning, & feature extraction using **Numpy**, **Pandas** and **Scikit-learn**.
- 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**.