

Aditya Kulkarni

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EDUCATION

University of Texas at Dallas

Master of Science, Computer Science. **GPA: 3.67/4**

Independent Research: Visual tracking of aquatic animals using ML controlled underwater robots
IBM Data science specialization

Dallas, TX

August 2023 – May 2025

Savitribai Phule Pune University

Bachelor of Engineering, Computer Science. **GPA: 9.12/10**

Pune, India

August 2017 – May 2021

WORK EXPERIENCE

University of Texas at Dallas

Graduate Research Assistant

Dallas, TX

May 2024 – Present

- Engineered a specialized **object detection system** for aquatic animals using **ResNet50** architecture achieving **87% accuracy**.
- Analyzed over 25 articles on state-of-the-art underwater **robotics** and **vision tracking systems** and presented a detailed review.
- Partnered with senior researchers at HBS Lab to advance **ML vision** capabilities for underwater **robot navigation**.
- Spearheaded research on **fine-tuning Large Language Models (LLMs)** for software engineering tasks, achieving an impressive **84% accuracy** rate and demonstrating potential for industry applications.

PubMatic Inc.

Software Development Engineer in Test-1

Pune, India

April 2021 – June 2023

- Implemented **Python** based automation for **functional test cases**, reducing execution time by **80%**.
- Pioneered the application of **generative AI** tools like ChatGPT to optimize code writing, achieving a **10%-time** reduction.
- Spearheaded **test plan design** for Adserver product, ensuring complete testing and reducing defect rate to less than **2%**.

PTC India

Research & Development Intern

Pune, India

September 2020 – March 2021

- Implemented **Selenium** with **Java** for **UI test automation**, maintaining over 1000 test cases using **Jenkins** resulting in improved stability.

PROJECTS

Realtime Reddit News Analysis

May 2024 – August 2024

- Engineered a real-time news classification and interpretation dashboard using **Apache Kafka**, **Spark Structured Streaming** and **Kibana** dashboard for visualizing real-time results using **ELK stack** with capability of processing **50** articles per minute.
- Developed news **classification** and **sentiment analysis** models using fine-tuned **DistilBERT** and **deep learning models** with bias classification accuracy of 83% and sentiment analysis accuracy of 91%.
- Skills: Apache Kafka, Apache Spark, Structured Streaming, Spark MLflow, ELK Stack, Python, NLP, LLM.*

InvestAid: An AI-powered Investment Dashboard

October 2023 – March 2024

- Designed an AI-powered **investment advisory** system leveraging **NLP** and **aspect-based sentiment detection** techniques.
- Leveraged **Spacy** models to analyze **sentiment and topics** in over 50,000 social media posts and financial news articles, achieving a classification accuracy of **85%** and identifying 10 key topics relevant to financial markets.
- Integrated historical **data analysis** to generate data-driven stock position **recommendations** for top 3 performing stocks.
- Skills: Python, Spacy, NLP, Time Series Analysis, Deep learning, PyTorch, Tensorflow, Neural network architecture design.*

Vehicle Surveillance System

August 2020 – May 2021

- Developed a **YOLOv3**-based License plate recognition system using existing CCTV infrastructure with capture rate of **95%**.
- Implemented **real-time** unauthorized vehicle detection using **OCR** for license plate data with feedback time of **3 seconds**.
- Optimized **computer vision** algorithms for efficient processing of live video feeds achieving a processing time of **5 seconds**.
- Skills: Python, OCR, Computer vision, Object detection and tracking, Video analysis, PyTorch, Tensorflow.*

SKILLS

Machine Learning & AI: Deep Learning, Natural Language Processing, Computer Vision, Large Language Models (LLMs), Scikit-learn, Pandas, NumPy, Keras, PyTorch, Hugging Face Transformers.

Big Data Technologies: Apache Spark, Structured Streaming, Kafka, HDFS, Hive.

Programming Languages: Python (proficient), C++ (proficient)

Databases: MongoDB, MySQL.

DevOps & Tools: Docker, Git, Jenkins, Kubernetes, Linux, LXC, ELK Stack, Flask.