

ANIRUDH BHATTACHARYA

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EDUCATION

University of Southern California, Master of Science – Computer Science, GPA: 3.5	May 2025
University of Mumbai, Bachelor of Technology – Computer Engineering, GPA: 9.36 / 10	July 2023

WORK EXPERIENCE

University of Southern California – Data Science and Operations	Los Angeles, CA, USA
Software Engineering Student Worker	October 2024 – Present

- Tech Stack:** Python, PyTorch, Instagram APIs, Postgres, Ultralytics, GPT-4, Computer Vision, ReactJS, FastAPI, Full-Stack, Shell
- Design, engineer machine learning models with 90%+ accuracy for agricultural yield classification to improve safety, efficiency.
  - Develop CV models to identify high-quality yields in crops (bananas), automating, streamlining quality inspection processes.
  - Construct data-driven, interactive applications enabling small businesses to conduct market analysis, derive marketing insights.
  - Enable MSMEs to augment marketing strategies through identification of competitors for inspiration through statistics, AI.
  - Ensure scalability, fault tolerance through microservice based full-stack architecture, extensive unit, integration testing.

University of Southern California – Advanced Composites Simulation Lab	Los Angeles, CA, USA
Machine Learning Engineer, Research	January 2024 – December 2024

- Tech Stack:** Python, PyTorch, T4 GPU, Computer Vision, Google DeepLab
- Optimize the safety and performance of aircraft by applying artificial intelligence to detect voids in aerospace materials (COSB).
  - Improve void detection accuracy to 90%+ by applying state-of-the-art algorithms on High Performance Computing systems.
  - Implement novel research techniques with unsupervised and supervised deep learning performed on 3D micro-CT image data.

ViyaMD	Los Angeles, CA, USA
Machine Learning Engineering Intern	May 2024 – July 2024

- Tech Stack:** Python, PyTorch, Large Language Models (LLMs), Retrieval-Augmented Generation (RAG), GPT4, Qdrant, PDF Parsing
- Developed systems to facilitate communication between doctors, patients, improving healthcare delivery, patient outcomes.
  - Engineered sophisticated RAG systems, leading to 10% improvement in retrieval within complex information environments.
  - Constructed internal typing functionalities, resulting in better evaluation metrics for RAG, 5% increase in developer efficiency.
  - Optimized ingestion to 90%+ F1 for healthcare guidelines ingestion, minimizing data loss for precise communication.

University of Southern California – Information Technology Program	Los Angeles, CA, USA
Teaching Assistant – ITP 168	March 2024 – May 2024

- Instructed undergraduate MATLAB course to 150+ students, providing individualized support, to realize learning outcomes.
- Developed, graded assignments, ensuring accurate assessment, feedback to promote understanding, academic performance.

SOFTWARE ENGINEERING PROJECT EXPERIENCE

QuestDB: Automated, Lightweight Snapshots <a href="#">(link)</a>	October 2024 - December 2024
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- Tech Stack:** Java, Database Internals, Docker
- Enhanced consistency of open-source, high-performance, time-series database using lightweight snapshot creation techniques.
  - Optimized database’s functionality on unstable or resource-constrained hardware, enabling data recovery, reducing downtime.

Path Planning with Reinforcement Learning <a href="#">(link)</a>	January 2024 - May 2024
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- Tech Stack:** Python, Microsoft AirSim, Google Cloud Platform, OpenAI Gym, OpenCV, NVIDIA T4, PyTorch
- Orchestrated training framework for reinforcement learning models to plan paths of unmanned aerial vehicles in real time.
  - Leveraged HPC systems for model development, 3D Image, LIDAR processing to secure 0 collisions with 1 million+ steps.
  - Built robust rewards to achieve 60% speed improvements over RL systems built in AirSim harnessing Gymnasium models.

Feedback Based Telecom Churn Prediction with Machine Learning <a href="#">(link)</a>	July 2022 - May 2023
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- Tech Stack:** Python, ReactJS, JavaScript, Scikit-learn, REST APIs, Django ORM, SQLite, Docker, TextBlob, Visual Studio, git, Scrapy.
- Spearheaded a collaborative, research-driven project aimed at improving churn prediction rates by 6% in the telecom industry.
  - Enhanced prediction accuracy by 5% with ML model in scalable full-stack system, using Agile, peer reviews, rigorous testing.

**Publication:** IEEE, ICAST 2022, pp. 481-485, doi: 10.1109/ICAST55766.2022.10039530 | [\(IEEEExplore\)](#)

CORE COMPETENCIES AND SKILLS

<b>Languages:</b> Python, C++, C#, Java, R, C, JavaScript, Ruby, Scala, Go	<b>Web:</b> ReactJS, NodeJS, ExpressJS, Angular, Redux
<b>AI:</b> PyTorch, Tensorflow, CUDA, Caffe, MxNET, TVM, Hugging face	<b>Databases:</b> Postgres, SQLite, MongoDB, Oracle, Cassandra
<b>Systems:</b> UNIX/Linux, AWS EC2, Azure, GCP, dbt, git, Airflow, Jira	<b>Software:</b> Kubernetes, Hadoop, Spark, Hive, Kafka, bigQuery
<b>Frameworks:</b> .NET, Django, Flask, Kotlin, Swift (iOS), Spring Boot, AJAX	<b>Others:</b> HBase, Ruby, Redis, GenAI, Rust, Tableau, JVM