ANIRUDH BHATTACHARYA

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EDUCATION

University of Southern California, Master of Science – Computer Science, GPA: 3.5 / 4 — 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, Postgres, RAG, GPT-4, OpenCV, ReactJS, FastAPI, Cypress, Shell

- Design, engineer machine learning models with 90%+ accuracy for agricultural yield classification to improve safety, efficiency.
- Develop models to identify high-quality yields in crops (bananas), automating, streamlining quality inspection processes by 50%.
- Facilitate MSMEs to optimize marketing strategies with scalable, data-driven, fault tolerant system, boost effectiveness by 15%.
- Empower firms via empirical audit, AI insights, through full-stack, unit/integration-tested services, reducing review time by 30%.

ViyaMD — Los Angeles, CA, USA
Machine Learning Engineering Intern — May 2024 – July 2024
Tech Stack: Python, PyTorch, LLMs, 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 pipeline to support healthcare guidelines with 90% F-1, minimizing data loss for precise communication.

University of Southern California – Advanced Composites Simulation Lab — Los Angeles, CA, USA
Machine Learning Student Researcher — January 2024 – December 2024
Tech Stack: Python, PyTorch, T4 GPU, Computer Vision, Google DeepLab

- Optimized safety, performance of aircraft by 30%, integrating deep learning to detect voids in aerospace materials (COSB).
- Improved void detection accuracy to 93% by fine-tuning state-of-the-art algorithms on High Performance Computing systems.
- Implemented novel research techniques with unsupervised, supervised deep learning performed on 3D micro-CT image data.

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 *(link)* — October 2024 - December 2024
Tech Stack: Java, Database Internals, Docker

- Enhanced consistency of time-series database reducing data loss by 50% using automated lightweight snapshot techniques.
- Optimized database's functionality on unstable or resource-constrained hardware in IoT, manufacturing environments by 40%.

Path Planning with Reinforcement Learning *(link)* — January 2024 - May 2024
Tech Stack: Python, Microsoft AirSim, GCP, OpenAI Gym, OpenCV, 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 *(link)* — July 2022 - May 2023
Tech Stack: Python, React.JS, Scikit-learn, SQLite, Docker, TextBlob, 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, employing Agile, code reviews, full testing.

Publication: IEEE**,** ICAST 2022, pp. 481-485, doi: 10.1109/ICAST55766.2022.10039530 | *(IEEEXplore)*

CORE COMPETENCIES AND SKILLS

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