

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

- MSME AI Tool | **Tech Stack:** Python, PyTorch, Instagram, Postgres, RAG, ReactJS, FastAPI, Cypress, Shell
- 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%.
- Transmission Line Damage Modeling | **Tech Stack:** Python, ArcGIS, PostGIS
- Design, engineer predictive models to assess fire-driven transmission line damage with 30% improvement over Fragility curves.
 - Build model incorporating topography, wind, fire models, vegetation improving PSPS threshold, yielding 15% less asset damage.

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
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- 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
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- 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.
 - Built reward functions based on 3D Image, LIDAR sensors to path find 60% faster than conventional systems with 0 collisions.

Feedback Based Telecom Churn Prediction with Machine Learning (link)	July 2022 - May 2023
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- Tech Stack:** Python, ReactJS, 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 | [\(IEEEExplore\)](#)

CORE COMPETENCIES AND SKILLS

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