ANIRUDH BHATTACHARYA

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EDUCATION

University of Southern California, Master of Science – Computer Science, GPA: 3.57 / 4 — May 2025

University of Mumbai, Bachelor of Technology – Computer Engineering, GPA: 9.36 / 10 — July 2023

WORK EXPERIENCE

University of Southern California – Marshall School of Business — Los Angeles, CA, USA
Software Engineering Student Worker — October 2024 – Present

MSME AI Tool | **Tech Stack**: Python, PyTorch, Instagram, Postgres, RAG, React.JS, FastAPI, Shell, PGVector

- 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, React.JS, Leaflet

- 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.
- 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 deep learning algorithms 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.

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

Dronebusters: Hacking for Defense — January 2025 - May 2025

Tech Stack: MATLAB, Acoustic Sensors

- Modeled search patterns, pathfinding algorithms in C-sUAS for US Army in reducing soldier wartime injuries/casualties by 95%.
- Gathered, defined requirements by conducting interviews, performing customer discovery, utilizing mission model canvas.

PUBLICATIONS

Feedback Based Telecom Churn Prediction with Machine Learning *(Paper Link)* — December 2022

Institute of Electrical and Electronics Engineers**,** ICAST 2022 | doi: 10.1109/ICAST55766.2022.10039530 | *(Source Code)*

CORE COMPETENCIES AND SKILLS

Languages: Python, Java, JavaScript, C++, C, C#, MATLAB, Ruby
AI: PyTorch, Hugging Face, Langchain, Tensorflow, SKLearn
Systems: Docker (UNIX), GCP, GCP, git, Kubernetes, AWS EC2
Web: FastAPI, Django, Flask, React.JS, Node.JS, .NET
Databases: Postgres, SQLite, Oracle, QuestDB, MongoDB
Tools: Kubernetes, Hadoop, Spark, Hive, PGVector