

# ANIRUDH BHATTACHARYA

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## EDUCATION

<b>University of Southern California</b> Master of Science – Computer Science	Los Angeles, CA, USA May 2025
<b>University of Mumbai</b> Bachelor of Technology – Computer Engineering	Mumbai, MH, India July 2023

## WORK EXPERIENCE

<b>University of Southern California – Advanced Composites Simulation Lab</b> <b>Machine Learning Researcher</b>	Los Angeles, CA, USA January 2023 – Present
<ul style="list-style-type: none"><li>Improving performance and safety by implementing state-of-the-art machine learning and deep learning algorithms to detect voids in aerospace materials.</li><li>Improving void detection accuracy in composite oriented strand board (COSB) materials up to 90%+ by processing micro-CT imagery detected data with Tensorflow, PyTorch with VGG-19 ML on P100 GPU.</li><li>Augmenting domain of research from 2D to 3D analysis of voids in COSB with captured and generated imagery.</li></ul>	
<b>Connect Club Pvt Ltd</b> <b>Software Engineering Intern – Machine Learning and Data Science</b>	Mumbai, MH, India June 2021 - July 2021
<ul style="list-style-type: none"><li>Streamlined data inference, modelling and analytics by 20% by preprocessing data integrating Numpy and Pandas in Python.</li><li>Generated data visualizations with Matplotlib, Seaborn for over 10,000 datapoints, aiding data analysis, management.</li><li>Engineered 90%+ accuracy in designing neural network-based machine learning models on cleaned data.</li></ul>	
<b>Chance to Give</b> <b>Software Engineering Intern - Web Development</b>	Hyderabad, TN, India July 2021 - October 2021
<ul style="list-style-type: none"><li>Constructed site with JavaScript, HTML, CSS in collaboration with backend, database teams, ensuring 25% increase in reach.</li><li>Upheld performance through peer reviews of code, collaborating through Waterfall, managed hosting through GitHub pages.</li><li>Led a team during Chance's Climate Change movement through awareness campaigns, envisioned updates to UI of site.</li></ul>	

## SOFTWARE ENGINEERING PROJECT EXPERIENCE

<b>Feedback Based Telecom Churn Prediction with Machine Learning</b> ( <a href="#">link</a> )	July 2022 - May 2023
<ul style="list-style-type: none"><li>Spearheaded a collaborative research-driven project to improve prediction rates by 6% for churn in telecom industry.</li><li>Authored a paper submitted to IEEE Xplore (<a href="#">link</a>) proposing a solution with upgraded model and innovated system architecture, building upon existing research in the fields of machine learning and big data.</li><li>Augmented accuracy to 90% leveraging scikit-learn built model, 81% accurate NLP module in scalable full-stack system with Django, React.JS, Scrapy for data mining, cooperation through Agile (scrum), peer reviews through Visual Studio, git.</li><li>Fulfilled SOA through RESTful API, Django ORM for pipelining through SQLite DDL defined database, containerizing by Docker.</li></ul>	
<b>Drowsy Driver Detection</b> ( <a href="#">link</a> )	July 2021 - December 2021
<ul style="list-style-type: none"><li>Pioneered development of an autonomous system to detect driver drowsiness with 95% accuracy, built in collaboration through CI/CD pipeline employing facial detection and analysis in test driven environment.</li><li>Formulated 96% accurate facial image and video detection in non linear model through OpenCV's cascade models, 94% accuracy in through Tensorflow's CNN with 5 layers on T4 GPU with transformation, automated workflow through Keras.</li><li>Achieved 2s detection time with audio alerts, refined models for multithreading, unit, integration tested through Visual Studio.</li></ul>	
<b>Other Software Engineering Project Experience</b> Video Player ( <a href="#">link</a> )	July 2020 - December 2020
<ul style="list-style-type: none"><li>Spearheaded waterfall driven collaborative effort to formulate video player optimized by 88% for high volume servers.</li><li>Guaranteed multithreading and speed with Java for core object-oriented processing and JavaFX for GUI, tested using A/B.</li><li>Validated high compatibility with mp4/mkv/wmv/avi/MPEG/H.264/265 files being supported with 0% audio/video latency.</li></ul>	
Parallel Processing and Machine Learning with CUDA ( <a href="#">link</a> )	December 2023 – January 2024
<ul style="list-style-type: none"><li>Improved algorithm, 3D rendering by 70%, parallelizing on T4 GPU with C++, CUDA for distribution for faster data engineering.</li><li>Implemented machine learning algorithms, convolutions using PyTorch, CUDA with 50% faster compilation on GPU, FPGA.</li></ul>	

## CORE COMPETENCIES AND SKILLS

**Languages:** Python, C#, Java, R, C, JavaScript, C++, Go, TypeScript, Scala **Web:** React.JS, Node.JS, Express.JS, Angular, Vue, MVVM  
**AI:** PyTorch, Tensorflow, CUDA, Caffe, MxNET, TVM, Hugging face **Databases:** MySQL, Postgre, 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, AJAX **Others:** Vulkan, NGINX, Redis, Data lakes, MapReduce, Rust