

# SAI ROHITH TANUKU

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## EDUCATION

### University of Pittsburgh

Aug 2023 – Apr 2025

*Master of Science in Computer and Information Sciences, GPA: 3.95/4.00*

Pittsburgh, PA

*Coursework: Algorithms, Machine Learning, Neural Networks, Cloud Computing, Data Analytics, SDLC*

### Manipal Academy of Higher Education

Aug 2019 – May 2023

*Bachelor of Science in Computer Science & Communication Engineering, Minor: Big Data*

Manipal, India

*Coursework: Database, Operating Systems, Big Data, Computer Network, Data Mining, Web & App Dev*

## WORK EXPERIENCE

### University of Pittsburgh

Jun 2024 – Present

*Master of Data Science Course Facilitator and TA*

Pittsburgh, PA

- Engineered an AI-assisted autograding pipeline and redesigned test cases for 15 Coursera-based assignments, reducing TA workload by 30%, while supporting 140+ students with code reviews and academic guidance over two semesters.

### EAIESB (Enterprise Solutions)

Jan 2023 – May 2023

*Software Engineer Intern*

Hyderabad, India

- Developed a real-time data ingestion system processing 10K+ events/day, supporting analytics, decisioning, and error-handling workflows, powering the company's automated, personalized, user behavior-driven SaaS products.
- Built a FastAPI-based system for uploading 10GB+ datasets and running ML tasks (clustering, regression, classification) using scikit-learn, with Pandas for automated preprocessing, enabling result visualization and reducing processing time by 40%.
- Designed a fault-tolerant error-handling framework with APEX, Sentry, and CloudWatch, supporting 5K+ API requests/day, reducing error rates by 30% through retry logic, Salesforce routing, Redis caching, and ETL optimization.

### Larsen & Toubro

Jun 2022 – Aug. 2022

*Artificial Intelligence Research Intern*

Chennai, India

- Fine-tuned a YOLO-based pedestrian detection model with data augmentation and hyperparameter tuning, using a custom 60K-image dataset, boosting mAP from 78% to 88%, and optimizing for real-time edge performance.
- Constructed an automated deep learning pipeline for satellite imagery using TensorFlow, OpenCV, and GIS tools, training RetinaNet and EfficientDet models to achieve 85% object detection accuracy, and reduce manual processing time by 25%.
- Processed high-resolution LiDAR data (500M+ points/scan) for 3D construction site mapping and a visualization pipeline, enabling remote terrain analysis in <15 mins, reducing on-site inspection time and improving interpretation speed by 15%.

## PROJECTS

### Fine-Tuning LLaMA and DeepSeek for SQL Generation | PyTorch, LLM, SQL, LLM Fine-Tuning, NLP

- Fine-tuned LLaMA-7B and DeepSeek-Coder models on 120K+ NL-to-SQL pairs through PyTorch, Hugging Face, and DeepSpeed on multi-GPU A100 clusters, improving SQL query correctness by 30% over baseline models.
- Implemented scalable, domain-adaptable training workflows to support custom SQL dialects across finance, e-commerce, and healthcare applications.

### VillaVista: Villa Rental Platform | NestJS, TypeScript, PostgreSQL, Prisma, JWT, Stripe, Twilio, AWS, Docker, Jest, Agile

- Architected a full-stack villa rental platform using NestJS, TypeScript, and PostgreSQL, serving 10,000+ users with 99.9% uptime, implementing JWT authentication and a scalable Prisma ORM database schema.
- Integrated real-time payment processing with Stripe and Razorpay, handling 5,000+ transactions, and deployed on AWS using Docker and CI/CD pipelines, achieving 90%+ test coverage with Jest.

### Blockchain-Based Data Integrity System | Python, Ethereum, Cassandra, Merkle Trees, MapReduce

- Built a fault-tolerant data integrity system using Ethereum, Cassandra, and Merkle Trees, detecting 97% tampering on 1.2B+ records and outperforming baseline methods by 4× with distributed MapReduce processing.

## TECHNICAL SKILLS

**Languages:** Python, Java, C/C++, SQL, TypeScript, JavaScript, HTML/CSS, R, Shell Scripting

**Frameworks & Libraries:** PyTorch, TensorFlow, OpenCV, MLPs, FastAPI, Node.js, Express.js, React.js

**Cloud, Big Data & Databases:** AWS, Docker, CI/CD Pipelines, PostgreSQL, MongoDB, Spark, Hadoop, ETL Pipelines

**Optimization & System Design:** Linear, Nonlinear & Convex Optimization, RNNs, CNNs, GRUs, Keras, GANs, VAEs, Distributed Computing, LSTMs, Load Balancing, Multi-threading, Caching