# Gautam Bulusu

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## EDUCATION

**University of Maryland, College Park** *Aug 2025 – May 2027*
Master's in **Applied Machine Learning**

**KJ Somaiya College of Engineering, Mumbai (affiliated to Somaiya Vidyavihar University)** *May 2024*
Bachelor's of Technology in **Information Technology - CGPA: 8.54/10.00**

## SKILLS

- **Programming Languages:** Python, C, C++, Java, R, SQL, JavaScript, MATLAB, PHP
- **Scientific Computing & Data Science:** pandas, numpy, scikit-learn, XGBoost, SHAP, FinBERT, TensorFlow, PyTorch
- **Cloud & DevOps:** AWS, Google Cloud Platform, Azure, Docker
- **Software Tools & IDEs:** GitHub, Jupyter Notebooks, VS Code, PyCharm, Eclipse, Android Studio, MicroChip Studio
- **Data Visualization & BI:** Matplotlib, Seaborn, Power BI, Tableau
- **Operating Systems:** Linux, macOS, Windows
- **Other Tools:** Cisco Packet Tracer, MS Office Suite

## WORK EXPERIENCE

**Reliance Brands Limited, Mumbai** *Jul 2024 – Mar 2025*
**Software Engineer Intern**

- **Built** an end-to-end Python + Streamlit financial analysis platform, replacing legacy Excel workflows and **reducing processing time by 80% (weeks → days)** for cross-functional teams across **71 international brands**.
- **Automated** Tableau reporting with Python scripts (login, navigation, filtering, downloads), **saving ∼6,250 employee-hours annually** by eliminating repetitive daily tasks for **25 analysts**.
- **Optimized** the firm's "**Waterfall Process**" by integrating data pipelines into in-app dashboards (**Store P&L, IRR, Payback, Cashflow, PERT**), delivering **real-time insights** to stakeholders including the **CFO and CEO**.
- **Deployed** applications on **Azure App Services**, ensuring **enterprise-grade scalability, reliability, and security**.

## INTERNSHIPS

**Jio Institute, Navi Mumbai** *Jun 2023 – Sep 2023*
**Computer Vision Intern**

- Leveraged **Meta's Segment Anything Model (SAM)** with a **weakly supervised training pipeline** to segment vertebrae in **3D/4D CT scans**, reducing reliance on fully annotated datasets by **∼60%**.
- Engineered an **automated pipeline** to extract vertebrae centroids and compute **Cobb angles** for scoliosis assessment, achieving **92% accuracy** compared to radiologists.
- Processed and analyzed **374 4D CT scans** from the **VerSe 2019–2020 Grand Challenge** dataset.
- Accelerated **clinical workflows** by **30%**, showcasing the potential of **AI-assisted diagnosis** in orthopedic imaging.

## ACADEMIC PROJECTS

**Market Regime Detection Using Financial Sentiment and Technical Indicators** *September 2025 - Dec 2025*
*University of Maryland, College Park*

- **Developed** a stacking ensemble (Random Forest + XGBoost) integrating FinBERT-extracted news sentiment with technical indicators to classify S&P 500 regimes, achieving **67.8% accuracy** and **+35% Sharpe ratio** improvement over buy-and-hold.
- **Engineered** 60+ features (price/volatility signals, sentiment lags, interactions) and conducted SHAP analysis, showing sentiment contributed **44%** of predictive power and provided 5–10 day advance warning for market stress.
- **Backtested** dynamic asset allocation strategies, demonstrating a **26% reduction in volatility** and **29% lower drawdowns**, validated over 10 years and 2,500+ trading days.
- **Implemented** research infrastructure in Python (scikit-learn, XGBoost, FinBERT, SHAP, pandas), enabling automated feature generation, regime modeling, explainability, and institutional-grade backtesting.

**Mangrove Assessment using Satellite Imaging** *Oct 2023 – Apr 2024*
*KJ Somaiya College of Engineering, Mumbai, India*

- **Assessed** mangrove coverage in Maharashtra (2002–2022) and noted **1651.94 hectares of loss**.

- **Developed** spatial simulation models in Python and Google Earth Engine for restoration feasibility.
- **Determined** that **Random Forest outperformed SVM** by 3.06% accuracy.

**Ocular Diseases Detection** *Jan 2023 – Apr 2023*

*KJ Somaiya College of Engineering, Mumbai, India*

- **Developed** deep learning models using **VGG16** and **MobileNetV2** with transfer learning to classify glaucoma, cataract, and diabetic retinopathy.
- Achieved **F1 scores: 0.97 (Normal), 0.69 (Cataract), 0.90 (Glaucoma), 0.88 (Diabetic)**.

## TECHNICAL EXPERIENCE

**Team KJSCE Robocon – Vice-Captain and Software Lead** *Aug 2022 – Jun 2023*

- **Conducted** training for 40–50 juniors on Data Structures, Embedded Programming, and Image Processing.
- Explored **MATLAB, ROS, deep learning** for robotic automation.
- Integrated Kinect sensor on Jetson Nano for arena mapping and robot automation.

**Team KJSCE Robocon – Coding Team Member** *Sep 2021 – Aug 2022*

- Implemented **Dijkstra's algorithm** for robot path planning, reducing round time by 3s.
- Fine-tuned **YOLOv5 model** on 1200 images, deployed on Raspberry Pi for real-time targeting.
- Contributed to team achieving its highest-ever All-India rank – **6th place at ABU Robocon (IIT Delhi)**.

## COMMUNITY SERVICE / SOCIAL WORK

- As a passionate robotics enthusiast, I volunteered at **World Robot Olympiad (WRO) West India Regional Championship 2022** held in Mumbai, where I was tasked with evaluating the performance of participants' robots according to the competition's rigorous standards.
- I led the **Team KJSCE ROBOCON** and organized a 2-day robotics workshop in November 2022 for 80 engineering students at KJSCE Mumbai, teaching them robotics basics and guiding them to build a soccer-playing robot from scratch. They were able to control the robot using their phones.