RISHIK MUTHYALA

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Education

University of Massachusetts Amherst — Sep 2023 – May 2027
Honors Bachelor of Science in Computer Science & Mathematics, Minor in Business — GPA: 3.6/4.0 — *Amherst, Massachusetts*

Experience

MITRE Corporation — Jun 2025 – Aug 2025
Software Engineering Intern — *Bedford, Massachusetts*
- **Secured mission-critical DoD satellite communications** by developing Python-based V&V scripts for **space-to-space network links** and **space-to-ground contact protocols**, using AFSIM for spacecraft mission simulation, achieving **95% test coverage** and validating **200+ transmission windows** per orbital cycle for **national security operations**
- Built **automated testing frameworks** and **satellite orbit propagation models** using Python/Orekit, implementing **12+ orbital parameter validation checks** with Cesium 3D visualization, supporting **15+ concurrent satellite missions** while delivering **35% faster computational performance** for **complex multi-satellite coordination**

Treevah — Dec 2024 – May 2025
Full Stack Engineering Intern — *Chicago, Illinois*
- Scaled **enterprise file management system** handling **500K+ documents** and **projected 10,000+ daily users** using React/TypeScript, Redis caching, **Elasticsearch-powered search**, and WebSocket real-time updates, improving **file access latency by 40%** and achieving **projected $200K annual cost savings**
- Architected **full-stack cloud infrastructure** using Azure services with **RESTful APIs**, JWT authentication, rate limiting, and **secure data pipelines**, reducing transmission errors by **35%** while handling **ambiguous requirements** from cross-functional teams
- Conducted **AI integration research** leveraging OpenAI GPT-4 and Azure Cognitive Services to build **automated file categorization** POC, achieving **60% reduction** in manual organization tasks across **disparate data sources**

SelfServe — Jan 2025 – Apr 2025
Head IOS Development — *Boston, Massachusetts*
- Built **0-to-1 iOS hospitality platform** from scratch serving **projected 50+ hotel properties** and **25,000+ guests** using SwiftUI/Combine with MVVM architecture, CoreData persistence, and OAuth 2.0, reducing development cycle by **40%**
- Designed **serverless AWS backend** (Lambda, API Gateway, PostgreSQL) with **real-time WebSocket connections** for guest services and staff coordination, achieving **99.9% uptime** and enabling **democratized hospitality technology**

Columbia University — May 2023 – Sep 2023
Software Engineering Intern — *New York, New York*
- Developed **autonomous drone prototype** for **public safety applications** using Python, TensorFlow/PyTorch with **real-time MAVLink communication** and custom object detection, improving tracking accuracy by **30%** for **emergency response scenarios**
- Engineered **data pipeline processing 1TB+ flight telemetry data** using Pandas/NumPy for analytics and **sensor fusion algorithms**, achieving **25% weight reduction** and **35% stability enhancement** while saving **$50K in R&D costs**

Projects

AI-Powered Phishing Detection System | *Python, XGBoost, LightGBM, Scikit-learn, Pandas, Jupyter* — Jun 2025
- Developed **gradient boosting ML model** for **malicious URL classification** using XGBoost/LightGBM with **hyperparameter tuning** and **ensemble methods**, achieving **0.07 log-loss score** in competitive Kaggle environment with **95%+ accuracy** on phishing detection

FoundU (36-Hour Hackathon Winner) | *React Native, Node.js, Google Vision API* — Nov 2024
- Built **ID recovery system** for **30K+ students** in **36 hours** using Google Vision API and Puppeteer automation - **pending campus deployment** with **500+ monthly recoveries** projected

DormBuddy | *Arduino, C++, Node.js, MongoDB* — Nov 2023
- Built **IoT smart dorm system** with Arduino sensors and **real-time data pipeline**, processing **10K+ daily readings** for automated room management

Campus Chirp | *React.js, Node.js, MongoDB, JWT, GCP* — Sep 2024
- Developed **full-stack social platform** for **30K+ students** with React frontend, Node.js **RESTful API**, and MongoDB - built for projected **GCP deployment**

Technical Skills

Languages: Python, Java, C, C++, JavaScript, TypeScript, Swift, HTML, CSS
Frameworks/Libraries: React, React Native, Node, Express, Next, SwiftUI, TensorFlow, PyTorch, Redux, Pandas, NumPy, WebSockets, OAuth, Azure SDK, Puppeteer, Poliastro, Orekit, Matplotlib, LightGBM, XGBoost, Random Forest, Scikit-learn
Cloud/Database/Tools: AWS, GCP, Azure, MongoDB, SQL, PostgreSQL, VS Code, Xcode, Android Studio, Git, GitHub, Docker, Arduino, Linux, AFSIM
Capabilities: Full-stack development, data pipeline engineering, system integration, model performance optimization, cross-functional collaboration, 0-to-1 product development, scalable distributed systems, real-time data processing, API design, microservices architecture, agile development, technical leadership, rapid prototyping