

MANESH PONNAPATI

+1 (480) 810-8409 | mponnapa@asu.edu | linkedin.com/in/maneshreddy/ | github.com/Manishreddy01

SUMMARY

Software Engineer with a focus on scalable service design, API development, and cloud-native deployment. Experienced in building containerized microservices using Python, FastAPI, and Docker, and deploying them on AWS and Azure using CI/CD pipelines. Strong background in debugging, testing, and optimizing system performance for distributed architectures and collaborative agile environments.

SKILLS

Programming Languages: Python, JavaScript, SQL, Java, C++

Backend & Frameworks: FastAPI, Flask, Node.js, LangChain, LangGraph, RESTful APIs, Microservices, OAuth, Async I/O Programming

Frontend: HTML5, CSS3, JavaScript (ES6+), TypeScript, React.js, Angular, Tailwind CSS, Redux, RESTful APIs, Responsive UI/UX Design

Databases: PostgreSQL, MySQL, MongoDB, Oracle, DynamoDB, Qdrant (Vector Store)

Cloud & DevOps: AWS (S3, EC2, DynamoDB, Lambda, IAM), Azure DevOps, Docker, Kubernetes, CI/CD, GitHub Actions, Container Orchestration

Testing & Observability: PyTest, Postman, Junit, Playwright, Prometheus, Grafana, LangSmith, Integration & Regression Testing, Monitoring & Debugging

Tools & Methodologies: Git, Linux, VS Code, Eclipse, Agile/Scrum, System Design, Power BI, Tableau

PROFESSIONAL EXPERIENCE

XNODE Inc **Connecticut, USA**
May 2025 - Present
AI Engineer Intern

- Contributed to XNODE's AI Agent Platform, a backend-focused solution enabling businesses to integrate AI-powered agents for smarter workflows, enhanced decision-making, and improved productivity through automated processes and system-wide integration.
- Designed and optimized LangGraph-based AI agents to execute automated workflows, integrating Playwright for browser automation, PostgreSQL for data storage, and internal REST APIs. Improved API call efficiency and concurrency handling, reducing agent response times.
- Tested agent workflows and backend services using LangSmith observability pipelines, logging execution data, tracking error rates, validating system performance, which cut agent failures by 25%.
- Deployed backend services with a Qdrant vector store for semantic search, containerized the services with Docker, and integrated them into the AI Agent Platform for production use.
- Participated in deployment by performing post-deployment integration checks, validating vector store data integrity, and collaborating with the DevOps team to ensure smooth production releases.

Reliance Jio Infocomm Limited **Hyderabad, TG, India**
May 2023 - August 2024
Software Engineer

- Built and deployed end-to-end RESTful services using Python, Flask, and SQL to automate network data processing and optimize cell tower placement across regions.
- Developed a Random Forest ML model for predictive coverage optimization, improving planning accuracy by 25% and supporting large-scale operational datasets.
- Consolidated 10+ backend APIs into a single, high-performance service layer using async I/O patterns, reducing integration latency by 35% and simplifying maintenance.
- Enhanced API and database efficiency through query tuning, schema optimization, and partitioning, reducing infrastructure cost and improving performance.
- Implemented synthetic data generation tools to validate pipelines and enable regression testing without live inputs, ensuring system reliability pre-deployment.
- Created Prometheus + Grafana dashboards to monitor API throughput, latency, and failure rates; improved visibility into key operational metrics.
- Containerized and deployed microservices using Kubernetes and Docker, ensuring seamless scaling and version-controlled rollouts.
- Collaborated with cross-functional DevOps and Data Science teams to ensure debugging, test plan execution, and smooth production releases with zero major incidents.

Vellore Institute of Technology **Velur, TN, India**
July 2022 - May 2023
Software Assistant

- Built and deployed 5+ RESTful backend APIs using Python (Flask) with MySQL for data persistence, implementing CRUD operations and optimizing performance for faster response times.
- Developed a secure middleware architecture using OAuth2 for user authentication and authorization, ensuring data integrity and controlled access across services.
- Implemented unit testing with PyTest and unittest, writing detailed unit test cases for API endpoints and database interactions to ensure reliability before production deployment.
- Deployed the application on local Linux servers using Docker containers, performing integration testing and version control with Git to ensure stable and reproducible builds.

PROJECTS

Cloud-Native Conversational Platform Using FastAPI and Qdrant

- Enabled context-aware conversations and scalable document retrieval in a full-stack AI chatbot by designing and implementing a distributed storage solution with Qdrant and Python, supporting efficient ingestion and metadata management for diverse file types.
- Improved user experience and flexibility by building dynamic LLM selection and persistent chat history using LangChain and React to handle ambiguous queries.
- Streamlined deployment and compatibility of a full-stack AI application by containerizing with Docker, integrating FastAPI backend endpoints, and supporting Agile development practices.
- Increased reliability of information retrieval by implementing Tavily API for web search fallback and optimizing retrieval algorithms using mathematics and data science principles.

Full-Stack Resource Management Platform on AWS

- Developed a distributed web application for managing campus resources, scheduling, and user roles, featuring modular backend services and a modern responsive UI.
- Built RESTful microservices using Python (FastAPI) and MySQL, integrated with a React.js frontend for dynamic data handling, role-based access, and real-time updates.
- Implemented unit testing with JUnit and PyTest, creating detailed unit test cases for API endpoints and service layers to ensure system reliability.
- Deployed and orchestrated microservices using Docker and Kubernetes on AWS, enabling auto-scaling, load balancing, and high-availability across distributed environments.

EDUCATION

Arizona State University **May 2026**
Master's, Information Technology **GPA: 4**

- Relevant Coursework: Data Structures & Algorithms, Object-Oriented Programming, Distributed Systems, Advanced Database Systems, Machine Learning, Cloud Computing, Optimization Techniques, Advanced Big Data, Artificial Intelligence

Vellore Institute of Technology **May 2023**
Bachelor's, Information Technology **GPA: 8.45**

- Relevant Coursework: Operating Systems, Computer Networks, Software Engineering, Database Management Systems, Big Data, Object Oriented Analysis and Design, Software Testing, Human-computer Interaction, Statistics and Probability, Network & Information Security, Web Development, Discrete Mathematics.

CERTIFICATIONS

- AWS Certified Cloud Practitioner
- AWS Certified Solutions Architect Associate