Manish Chepuri

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Education

North Carolina State University — Raleigh, NC
Bachelor of Science in Computer Science, Minor in Statistics, GPA: 4.0 — Expected May 2028

Experience

Automated Library Bug Frontporting - Undergraduate Research — May 2025 – Present
NCSU Department of Computer Science, Dr. Marcelo — Raleigh, NC

- Develop an AI agent using LLMs and the Model Context Protocol (MCP) to automatically forward-port software bugs into newer versions of libraries.
- Build a fully automated pipeline to inject bugs, configure environments, toggle runtime flags, and execute tests, eliminating manual intervention.
- Manage environments on both local machines and VMs using Docker, and leverage SSH/SCP to transfer and synchronize project files across systems.
- Collaborate with graduate mentor and peer researcher to benchmark pipeline performance and refine automation strategies.

3D Modeling & Design Intern — Jun. 2024 – Aug. 2024
Elite Remodeling and Design — Holly Springs, NC

- Created 3D model renderings using SketchUp for over 5 client interior and exterior renovation projects, resulting in over 60% project approval rates.
- Met with 10+ clients to discuss future design projects, manage finances, and improve customer satisfaction.
- Introduced and integrated LIDAR technology into the business model resulting in an increase in overall business efficiency.

Projects

AI Customer Service Agent with Business Intelligence | Python | SQL — Jun. 2025 – Present

- Develop custom MCP (Model Context Protocol) tools for real-time web scraping of business inventory and product data.
- Architect SQL database integration to capture and analyze all customer interactions and behavioral patterns.
- Design the foundation of an AI customer service solution for multi-location retail chain to automate sales and support processes.

Document Q&A System with Retrieval Augmented Generation | Python — Aug. 2025 – Present

- Built a Retrieval Augmented Generation (RAG) system using Claude API and OpenAI embeddings to enable intelligent Q&A across personal document collections.
- Developed end-to-end Python pipeline integrating multiple APIs, custom similarity algorithms, and document processing libraries with modular architecture.
- Implemented and compared multiple search algorithms (semantic embeddings vs BM25) with performance metrics, improving result relevance through LLM-based reranking.

Machine Learning Food Vision Model | Python | PyTorch — Jun. 2025 – Aug. 2025

- Developed a convolutional neural network using PyTorch to classify food images into predefined categories with approximately 90% accuracy.
- Evaluated model performance using metrics such as accuracy, confusion matrix, and cross-validation on a diverse food dataset.
- Integrated real-time prediction functionality to classify new food images using the trained model.

Skills & Activities

Languages: Python, SQL, Java
Frameworks: PyTorch
Developer Tools: Docker, MCP, Git, Visual Studio Code, AutoCAD, SketchUp
Related Courses: Software Development Fundementals - Java, Calculus I - III, Statistics II, Applied Differential Equations
Current Clubs: Grand Challenges Scholars Program, IEEE Member, High Powered Rocketry Club Member