Meghapranay Raparla

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— github.com/pranayr710 — academic-portfolio-sandy.vercel.app

Education

Amrita Vishwa Vidyapeetham **2028**
B.Tech in Computer Science and Engineering *Coimbatore, India*

- CGPA: 8.33/10
- Relevant Coursework: Data Structures, Algorithms, Object-Oriented Programming, DBMS, Operating Systems
- Solved 145+ problems on LeetCode focusing on graphs, recursion, and dynamic programming

Research Experience

Undergraduate Researcher **2026 – Present**
Amrita Vishwa Vidyapeetham *Advisor: Dr. Harini N.*

- Developing a C2PA-based AI Deepfake Detection and Media Authentication System integrating cryptographic provenance with ensemble deep learning models
- Designed hybrid verification pipeline combining SHA-256 integrity checks with CNN and FFT-based artifact detection
- Building evaluation framework to benchmark robustness against synthetic media manipulation
- Manuscript preparation in progress

Undergraduate Researcher **2025 – Present**
Amrita Vishwa Vidyapeetham *Advisor: Dr. Amit Agarwal*

- Developing Intelligent Strawberry Disease Detection system using YOLO-based object detection
- Built IoU-based dataset validation pipeline to ensure annotation integrity and reduce training noise
- Evaluating detection performance using precision, recall, and mAP metrics
- Model optimization and experimentation ongoing

Projects

AttenAI – Automated Code Analysis and Debugging System | *Java, JavaFX, Modular Architecture*

- Designed and implemented a modular AI-driven code debugging system capable of syntax analysis, logical error detection, and optimization suggestions
- Built structured modules including CodeAnalyzer, BugFixer, SyntaxAnalyzer, and CodeOptimizer to ensure scalability and maintainability
- Developed interactive JavaFX-based GUI supporting real-time error highlighting, execution feedback, and multi-threaded processing
- Integrated persistent storage and configuration management for tracking historical errors and improvement recommendations

GeoDroneAI – Autonomous Drone Delivery Simulator | *Java, Optimization Algorithms*

- Developed an AI-driven drone delivery simulation system with route optimization and constraint-based scheduling
- Implemented graph-based shortest path and cost minimization algorithms
- Modeled dynamic rerouting and priority-based delivery constraints to simulate real-world logistics

Data Structures Visualiser | *Java*

- Built an interactive visualization platform for trees, graphs, recursion workflows, and sorting algorithms
- Designed modular architecture enabling extensibility of additional data structures
- Implemented step-wise animation logic to demonstrate algorithm execution flow

Technical Skills

Languages: Java (Primary), Python, C, SQL
Core CS: Data Structures, Algorithms, OOP, DBMS, Operating Systems
AI/ML: PyTorch, Computer Vision, CNN Architectures
Developer Tools: Git, IntelliJ, VS Code
Methodologies: SDLC, Agile (Scrum), Modular System Design