Manvendra Rai

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Education

Vellore Institute of Technology **Oct 2022 – Oct 2026**
B.Tech, Computer Science and Engineering (Spec in Gaming Technology) *GPA: 8.47/10*

Skills

Languages: Java (DSA), JavaScript, Python, SQL, HTML/CSS
Frontend: React.js
Backend: Node.js, Express.js, REST APIs, WebSockets, JWT Authentication
Databases: MongoDB, MySQL
Cloud/DevOps: AWS (S3, EC2, Lambda, CloudFront, SQS), Docker, CI/CD
Tools: Git, GitHub, Vercel, VS Code

Projects

JarvisGPT AI Chat Bot — React, Node.js, Express, MongoDB, OpenAI API May 2025

- Engineered a full-stack conversational chatbot supporting 15+ concurrent user sessions with sub-200ms response times, verified through Chrome DevTools Network tab and Postman testing.
- Integrated OpenAI API with custom prompt engineering, processing 500+ messages during testing phase with 98% successful response rate tracked via MongoDB query logs.
- Secured application with JWT-based authentication handling 50+ test user accounts; measured token validation overhead at ¡5ms using Node.js performance.now() benchmarks.
- Architected 8 RESTful API endpoints following MVC pattern, achieving 100% test coverage on critical authentication flows using Postman collection runner.

Serverless Image Processing Pipeline — AWS (Lambda, S3, CloudFront, SQS) Jan 2025

- Automated image processing for 200+ test images using AWS Lambda with average execution time of 1.2 seconds per image, monitored via CloudWatch Logs and metrics dashboard.
- Reduced failed processing attempts from 15% to ¡2% by implementing SQS dead-letter queue with automatic retry logic; tracked via CloudWatch SQS metrics over 3-week testing period.
- Accelerated image delivery by 65% (from 800ms to 280ms average load time) using CloudFront CDN, measured through Chrome Lighthouse performance audits across 5 global locations.
- Cut storage costs by 40% for testing environment by configuring S3 lifecycle policies to transition 30-day-old objects to Glacier, validated through AWS Cost Explorer.

AI-Based Multi-Disease Prediction System — Python, Machine Learning Dec 2024

- Trained Random Forest classifier achieving 87% accuracy on 5,000-sample medical dataset, validated using scikit-learn's cross_val_score with 5-fold cross-validation.
- Improved minority class recall from 62% to 79% by applying SMOTE oversampling technique, measured using classification_report metrics in scikit-learn.
- Optimized model performance through GridSearchCV testing 48 hyperparameter combinations, reducing prediction latency from 180ms to 95ms measured via Python time module.
- Deployed Flask API serving 100+ prediction requests during demo phase with 100% uptime, load-tested using Apache Bench (ab) tool with 10 concurrent users.

Real-Time Chat Application — MERN Stack + WebSockets Sep 2024

- Delivered bi-directional messaging supporting 25+ simultaneous WebSocket connections with ¡100ms message latency, stress-tested using Artillery load testing framework.
- Implemented JWT token refresh mechanism extending session duration to 7 days while maintaining security; tested token expiry handling across 50+ auth scenarios.
- Boosted MongoDB query performance by 73% (from 45ms to 12ms average) by creating compound indexes on userId and timestamp fields, profiled using MongoDB Compass explain plan.
- Protected API from abuse with rate-limiting middleware capping requests to 100/hour per IP; validated effectiveness using custom Python script simulating 500 rapid requests.

Certifications & Achievements

- **IBM Cybersecurity Analyst Certificate (2025):** Learned fundamental cybersecurity concepts including common attacks and security practices.
- **Research Publication:** Co-authored IEEE conference paper "AI-Based Multi-Disease Prediction Using .
- **Competitive Programming:** Solved 250+ problems across LeetCode and Codeforces and achieved Pupil rating (1200+) on Codeforces.