MANASWI KULKARNI

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SUMMARY

Master's student in Computer Science at WPI with a deep interest in software development technologies that can be optimized, extended, or reimagined using AI. Passionate about building intelligent, user-centric systems that combine scalable engineering with machine learning to enhance performance, drive automation, and elevate user experience.

EDUCATION

Worcester Polytechnic Institute (WPI) **August 2024 – May 2026**

Master of Science in Computer Science

Experience - Building Manager *– Rubin Campus Center*

Coursework: *Data Structures & Algorithms, Database Systems, Big Data Analytics, Data Visualization, Design of Software Systems*

Jawaharlal Nehru Engineering College (JNEC) **June 2020 – July 2024**

Bachelor of Technology in Computer Science and Engineering with Honors in Artificial Intelligence

Coursework: *Object-Oriented Programming, Artificial Intelligence, Cloud Computing, Web Technology, Operating Systems*

PROFESSIONAL EXPERIENCES

Backend Developer – SyncQues (Pre-Launch Startup) | Worcester, MA **June 2025 – Present**

- Designed and deployed a scalable backend architecture using GraphQL APIs (Apollo Server) and MongoDB, enabling real-time Q&A interactions with <100ms latency for 10K+ concurrent users.
- Built an AI-powered answer engine leveraging LLMs and web scraping, with asynchronous task queues (Celery + Redis) to process 500+ requests/minute.
- Reduced API response times by 30% through AWS (EC2/Lambda/S3) infrastructure, Redis caching, and query tuning; achieved 99.9% uptime via CI/CD (Docker/GitHub Actions).
- Implemented JWT/OAuth 2.0 authentication with RBAC for content moderation, ensuring scalable security for user-generated data.

Machine Learning Engineer – NuVant Systems (A3 Global) | Boston, MA **May 2025 – Present**

- Built a full-stack battery diagnostic tool using Electron, React, and FastAPI for real-time test control and signal monitoring.
- Implemented real-time hardware integration using NI-VISA for electrochemical systems, showcasing experience with system-level programming and hardware communication protocols
- Designed ML pipeline for fast State of Charge inference, cutting analysis time from 3 hours to 2 minutes.
- Enabled support for multiple battery types through dynamic configs and plug-and-play modules.

Full Stack Developer – Atlas Copco Group| Pune, India **January 2024 – June 2024**

- Developed React dashboards with Plotly.js for real-time sensor insights across inhouse manufacturing systems.
- Implemented REST APIs using Flask and Node.js; leveraged Parquet files in Spark-based ETL, reducing data size by 30% and boosting processing by 25%.
- Collaborated cross-functionally with design and DevOps teams to embed Jupyter-based analytics into the UI and deploy CI/CD pipelines via Docker and Jenkins, streamlining analytics workflows under SDLC protocols.

Research Intern – Applied Technology Solutions Inc. (ApTSi) | Massachusetts, US **January 2023 – December 2023**

- Researched and developed optimized data flow architectures and UI frameworks using Angular, Node.js, and Axios, cutting interaction latency by 5 seconds per task.
- Worked on transaction modeling and data flow optimization, increasing processing efficiency by 20%.
- Conducted market research to evaluate platform performance and helped design data-driven strategies to improve user engagement and product reach.

ACADEMIC PROJECTS

BigDocBot – LLM-Powered Code Summarization & Static Analysis Tool **March 2025 – May 2025**
GitHub

- Built a code summarization tool using LangChain, CodeBERT, and CodeT5 to extract function-level summaries, complexity, and readability metrics from Python and Javascript codebases.
- Parsed source code with AST and generated line-by-line explanations using LLMs, enabling maintainability assessment.
- Developed an interactive UI to display summaries, scores, and token-based heatmaps with LLM result caching.

VizBotz – AI-Driven Data Visualization Assistant **February 2025 – April 2025**
GitHub

- Created a Streamlit tool that converts uploaded datasets into Altair/Vega-Lite charts with LLM-generated insights.
- Integrated OpenAI and Gemini APIs with a local RAG fallback, supporting offline semantic insight generation and metadata parsing.
- Modularized backend using prompt templating, schema detection, and natural language query handling for dynamic chart editing.

Abey – Serverless Auction House Platform **September 2024 – December 2024**
GitHub

- Designed a full-stack auction platform with AWS Lambda, API Gateway, S3, and PostgreSQL, enabling real-time bidding and item management.
- Built the frontend in Next.js (TypeScript) with Tailwind CSS and Redux, supporting live updates and route-based access control via JWT middleware.
- Deployed with AWS Amplify, implementing CI/CD, role-based authentication, and a secure session-aware architecture.

SKILLS

Languages & Frameworks: Python, Java, JavaScript, TypeScript, SQL, C, R, Go, React, Next.js, Node.js, Flask, FastAPI
AI/ML & LLMs: PyTorch, Scikit-learn, TensorFlow,OpenCV, LangChain, OpenAI API, CodeT5, CodeBERT, RAG
Databases & APIs: PostgreSQL, MongoDB, GraphQL, REST APIs
Cloud & DevOps: AWS (Lambda, EC2, S3, Amplify), Docker, Jenkins, CI/CD, Terraform
Visualization & Tools: Streamlit, Altair, Vega-Lite, Tableau, Plotly, Git, JIRA, Figma

CERTIFICATIONS

Microsoft Azure AI-900 Credential ID – 1361-2713 Link
Microsoft Azure DP-900 Credential ID – 1425-4144 Link