

Mohammed Pathariya

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EDUCATION

Master of Science in Data Science, Indiana University Bloomington, IN, USA
Coursework: Applied ML, Cloud Computing, Statistics, Data Viz, Database Tech, LLMs Aug. 2024 – Exp. May 2026
BE in Artificial Intelligence & Data Science, Pune University Pune, MH, India
Coursework: Machine Learning, Data Science, Artificial Neural Networks, Data Structures Aug. 2020 – May 2024

TECHNICAL SKILLS

Languages: Python, SQL, R, Bash
AI & ML Tools: OpenAI API, GPT-4o, CrewAI, PyTorch, scikit-learn, music21
Data Analysis & Visualization: Pandas, NumPy, Excel (Advanced), Power BI, Tableau
Web & Deployment: Flask, React, Docker, Streamlit, REST APIs, Hugging Face Spaces, Vercel
DevOps & Tools: Git, GitHub, VS Code, Jupyter Notebooks, GitHub Actions
Professional Skills: Data Storytelling, Prompt Engineering, Privacy Awareness (HIPAA, FERPA)

PROJECTS

The Digital Forge – AI Agents for Code Automation | *Multi-Agent Systems, LLMs* May 2025 – Present

- Developed an autonomous multi-agent system (Unit 734) using CrewAI and GPT-4o to simulate the software development lifecycle.
- Implemented agent collaboration for planning, coding, testing, and error-handling using prompt chaining and memory.
- Built a Streamlit interface to visualize agent interactions and deliver final code and test suite artifacts.
- Enabled dynamic code execution, debugging feedback, and iterative refinement for functional delivery from natural prompts.

LearnLoop – AI Study Companion | *LLMs, Full-Stack Web App, Education Tech* Jan. 2025 – April 2025

- Built a GPT-powered learning assistant combining chat, quiz, and flashcard modules with persistent history and analytics.
- Designed a modular Flask-React architecture using Docker Compose and deployed with full CI/CD support.
- Integrated OpenAI APIs with custom tone control and real-time feedback across dynamic learning workflows.
- Implemented session tracking and user stats, storing 100+ chat and quiz logs with backend analytics.

AudioGroove – AI Music Composition Platform | *Deep Learning, Generative AI* Oct. 2023 – Apr. 2024

- Engineered an AI-powered music generation platform using a PyTorch LSTM with self-attention to compose MIDI sequences.
- Processed 17K+ MIDI files with music21 for parsing, cleaning, and dynamic vocabulary generation.
- Deployed a decoupled Flask-Docker backend on Hugging Face Spaces and a lightweight frontend on Vercel.
- Implemented top-k sampling and temperature control to balance creativity with coherence in autoregressive music generation.

EXPERIENCE

Sparkwood IT Solutions Feb. 2022 – Jul. 2022
Data Engineering Intern Pune, India

- Built automated data pipelines using Python and SQL to deliver structured datasets for sales and product performance analysis.
- Designed and optimized SQL schemas, enhancing data accessibility and reducing query times by 40%.
- Developed ETL workflows for ingesting and transforming raw data, boosting reliability for downstream analytics and modeling.
- Partnered with data and full-stack teams to ensure data readiness for exploratory analysis and reporting.

PUBLICATIONS

Tunes by Technology: Comprehensive Survey of Music Generation Models Apr. 2024
ICC Robins, (DOI - 10.1109/ICC-ROBINS60238.2024.10534029) Pune, India

- Published research on AI-based music generation, analyzing GANs and RNNs for automated composition.