Agrannya Singh

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EDUCATION

Vellore Institute of Technology
B. Tech in Computer Science and Engineering | CGPA 9.04/10 — **Aug 2023 – Jun 2027**, Vellore, Tamil Nadu

Shivam Convent, Patna
High School (PCM) | CBSE | 94% — **Apr 2022**, Patna, Bihar

PROJECTS

Tune Trace| Next.js, FastAPI, Node.js, SQLite, SQL Alchemy, Sci-kit ,CORS ,YouTube API — Livelink GitHub

- A swipe-based music discovery app that fetches and filters YouTube music videos by mood/genre, delivering personalized recommendations and a smooth, mobile-friendly UI.
- Designed and implemented complete REST API architecture with 3 core endpoints with **Zero-downtime deployments** with health check endpoint monitoring
- Engineered sophisticated ML pipeline using Scikit-learn's TF-IDF vectorization and cosine similarity algorithms to analyse song titles, descriptions, tags, and channel metadata for content-based filtering
- Architected scalable data persistence layer using SQL Alchemy ORM with multi-database support (SQLite for development, PostgreSQL for production)

Othello Dojo| Next.js,Node.js ,Tailwind CSS, Genkit, Python — Livelink GitHub

- Led a team of **5 Members** to develop a sophisticated Minimax algorithm with Alpha-Beta pruning for autonomous reversi Agent, featuring multiple difficulty levels and advanced heuristics including corner control, mobility analysis, and edge positionin g strategy
- **Generative AI Integration**: Integrated Google Gemini AI through Genkit framework to provide real-time move suggestions and strategic explanations, creating AI "flows" that analyse game states and provide human-readable decision rationales
- **Hybrid AI Approach**: Combined traditional algorithmic AI (Minimax) with generative AI (Gemini) to provide both competitive gameplay and educational insights
- **Game Engine Development**: Implemented core Othello game logic with complete rule validation, move generation, piece flipping mechanics, and scoring systems

Cinema AI| Gradio, FastAPI, SQLite, scikit-learn, pandas, NumPy, OMDb API, CORS — HuggingFace GitHub

- Full-stack **movie recommendation system** that leverages machine learning algorithms to provide personalized movie suggestions based on user preferences
- implemented the entire backend infrastructure using FastAPI, designing 3 core REST API endpoints for movie retrieval, recommendation generation, and movie search functionality. Integrated OMDb API for real-time movie data fetching, implementing robust error handling and data validation for external API calls
- Developed and optimized content-based recommendation algorithms using scikit-learn, **implementing cosine similarity calculations** on movie feature vectors with **Count Vectorizer** for text processing

TECHNICAL SKILLS

Languages | TypeScript, Python, C++, C, Java, JavaScript, HTML, CSS, SQL, R
Frameworks | React, Django, Flask, FastAPI, Next.js, Node.js
Libraries | Pandas, NumPy, Matplotlib, TensorFlow, Keras, OpenCV, Transformers, XGBoost
Technologies| Docker, Kubernetes, PostgreSQL, MongoDB, Redis, AWS, IBM WatsonX, AutoML, IBM Cloud

CERTIFICATIONS

LFS183: Introduction to Zero Trust (The Linux Foundation)
LFS118: Ethical Principles for Conversational AI (The Linux Foundation)
LFC108: Cybersecurity Essentials(The Linux Foundation)/ Cybersecurity Fundamentals(IBM Skills build)
Building GenAI Applications with MongoDB (MongoDB University)
GenAI using IBM Watson X (IBM Developers Network)/Generative AI in Action (IBM)
Machine Learning for Data Science Projects(IBM Skills build)
Cloud Computing Fundamentals (IBM Skills build)
Artificial Intelligence Fundaments(IBM)/Data Science Fundamentals(IBM SkillsBuild Network)
Enterprise Design Thinking Practitioner(IBM)