

Agrannya Singh

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Education

- Vellore Institute of Technology** *Vellore, Tamil Nadu*
B.Tech in Computer Science and Engineering — CGPA 9.04/10 *Aug 2023 - Jun 2027 (expected)*
- Shivam Convent, Patna** *Patna, Bihar*
High School (PCM) — CBSE — 94% *Completed Apr 2023*

Projects

- AI-Powered Space Weather Intelligence Dashboard** *Next.js, TypeScript, Genkit, Docker*
[Livelihood](#) — [GitHub](#) *Jul 2024 - Present*
 - Constructed** a full-stack dashboard to visualize NASA space weather datasets with over **50,000 records** in real-time.
 - Created** a custom EDA engine in TypeScript that automates the generation of 5+ chart types, reducing manual analysis time by an estimated **80%**.
 - Leveraged** Google's Gemini AI via Genkit to generate contextual, EDA-aware summaries, making complex scientific data accessible to a broader audience.
- TuneTrace - Music Discovery App** *Next.js, FastAPI, PostgreSQL, Redis*
[Livelihood](#) — [GitHub](#) *May 2025 - Present*
 - Designed** a hybrid recommendation engine combining collaborative filtering with content-based algorithms and robust fallback mechanisms to enhance music discovery accuracy.
 - Built** a high-performance back-end microservice using SQLAlchemy ORM, leveraging Redis caching to achieve sub-200ms database latency and reducing external API response times by 40%.
 - Orchestrated** a complete CI/CD pipeline for automated, production-ready deployments on Render, ensuring system resilience and scalability to handle over 100 concurrent users.
 - Devised** a swipe-based music discovery app that fetches YouTube music videos by mood/genre, delivering personalized recommendations and a smooth, mobile-friendly UI.
- Othello Dojo** *Next.js, Node.js, Tailwind CSS, Python, MongoDB, Flask, TensorFlow*
[Livelihood](#) — [GitHub](#) *Jul 2025 - Present*
 - Led** a team of 5 to develop an autonomous Reversi agent with a Minimax algorithm and Alpha-Beta pruning, achieving a **95% win rate** against human testers.
 - Combined** traditional algorithmic AI (Minimax) with generative AI (Gemini) to provide both competitive gameplay and educational insights.
 - Trained** model over 2000+ games, achieving a 70% win rate against traditional Minimax model at depth 5.
 - Implemented** the core Othello game logic with complete rule validation, move generation, piece-flipping mechanics, and scoring systems.
- ScreenScout - Movie Recommendation Engine** *Next.js, TypeScript, FastAPI, scikit-learn*
[Hugging Face](#) — [GitHub](#) *Jun 2025 - Present*
 - Developed** a full-stack AI movie recommendation system using Next.js and FastAPI, leveraging scikit-learn to deliver personalized suggestions for over **15,000 movies**.
 - Architected** a RESTful API with FastAPI, implementing search and recommendation endpoints with CORS-optimized routing, achieving sub-second response times.
 - Integrated** the ODb API for real-time movie data collection, with robust error handling and data validation for seamless external API interactions.
 - Developed** content-based recommendation algorithms using scikit-learn, delivering suggestions to the user in under 500ms.

Technical Skills

- Languages:** TypeScript, Python, C++, C, Java, JavaScript, HTML/CSS, SQL, R
- Frameworks:** Next.js, React, Node.js, FastAPI, Flask, SQLAlchemy
- AI/ML Libraries:** scikit-learn, Pandas, NumPy, Matplotlib, TensorFlow, Transformers
- Cloud & DevOps:** Docker, Kubernetes, AWS, GCP Vertex AI, IBM Watsonx, Jenkins, Render
- Databases:** MongoDB Atlas, PostgreSQL, Redis, SQLite

Certifications

- [Artificial Intelligence Fundamentals](#) *IBM Developers Network*
- [Generative AI using IBM Watson X](#) *IBM Developers Network*
- [Cybersecurity Fundamentals](#) *IBM SkillsBuild*
- [LFC108: Cybersecurity Essentials](#) *The Linux Foundation*
- [Data Fundamentals](#) *IBM SkillsBuild*
- [Machine Learning for Data Science Projects](#) *IBM SkillsBuild*
- [LFS162: Introduction to DevOps and Site Reliability Engineering](#) *The Linux Foundation*
- [LFS167: Introduction to Jenkins](#) *The Linux Foundation*
- [Cloud Computing Fundamentals](#) *IBM SkillsBuild*