Agrannya Singh

📱 +91 9508901080   ✉ singh.agrannya@gmail.com   💼 agrannya   🐙 Agrannya-Singh

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 (Class XII), CBSE, 94% — *Completed Apr 2023*

- **Delhi Public School, Patna** — *Patna, Bihar*
  Secondary School (Class X), CBSE, 97% — *Completed Apr 2021*

Experience

- **Mokshapay** — *Remote*
  Founding Intern - Full Stack Developer — *Sep 2025 - Present*
  - **Frontend Architecture:** Developed a PWA-ready fintech platform using **Next.js 15** and Tailwind CSS, implementing custom typography and responsive grid layouts for a seamless user experience.
  - **Cloud Infrastructure (GCP):** Configured production infrastructure using **Terraform**, establishing a VPC with Cloud NAT and reserved static IPs to ensure **100% compliance** for third-party KYC/TSP vendors.
  - **Database Design:** Architected a comprehensive **PostgreSQL** schema (OLTP) for Loan Management (LMS) and Payment modules, while implementing robust **Firestore Security Rules** for user data protection.
  - **AI Integration:** Deployed a GenAI-powered helpdesk using the **Gemini API**, automating customer support queries and reducing manual ticket volume.

- **Labmentex** — *Remote*
  Python Intern — *Aug 2025 - Sep 2025*
  - Engineered a custom **Exploratory Data Analysis (EDA) engine** using **Python** and **Flask** to process NASA DONKI datasets (CME, FLR, GST), implementing automatic type inference for complex heliographic coordinates.
  - Developed a feature selection algorithm utilizing **Pearson Correlation** matrices to identify and filter highly correlated (redundant) features, effectively reducing dataset noise for downstream analysis.
  - Optimized data processing pipelines by implementing regex-based pattern matching to exclude non-predictive identifiers, ensuring high-quality data input for statistical modeling, and leveraged **Matplotlib** to generate visualizations such as **heatmaps, correlation charts, and frequency charts**.

Projects

- **AI-Powered Space Weather Intelligence Dashboard** [Livelink] 🐙 [GitHub] — *Jul 2024 - Present*
  Next.js, TypeScript, Genkit, Docker
  - 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** [Livelink] 🐙 [GitHub] — *May 2025 - Present*
  Next.js, FastAPI, PostgreSQL, Redis, Azure Web Services
  - Engineered a hybrid recommendation engine utilizing **TF-IDF vectorization** and cosine similarity, combining collaborative filtering (2 song overlaps) with a content-based fallback via the **YouTube Data API v3**.
  - Implemented a dual-layer caching strategy (**512-entry In-memory LRU + Redis**) with asynchronous background updates, reducing external API calls and achieving **sub-200ms database latency**.
  - Optimized system performance to deliver **40% faster** overall response times, architecting a **FastAPI** gateway with robust input sanitization and rate limits (Max 50 songs/request) to prevent DoS attacks.
  - Migrated backend microservices to **Azure Web Services** for scalability, ensuring reliable recommendation delivery while managing distinct user sessions via secure OAuth2 identification.

- **Othello Dojo** [Livelink] 🐙 [GitHub] 🇰 [Kaggle] — *Jul 2025 - Present*
  Next.js, Node.js, Tailwind CSS, Python, MongoDB, Flask, TensorFlow
  - Led a team of 5 to develop an autonomous Reversi agent, combining traditional Minimax algorithms with modern deep learning techniques for competitive gameplay.
  - Engineered a custom [Monte Carlo Tree Search (MCTS) pipeline] to generate 10,000+ synthetic training states, training a ResNet-based policy-value network (OthelloNetV3) that achieved a 70% win rate against traditional Minimax engines.
  - Implemented the core Othello game logic with complete rule validation, move generation, piece-flipping mechanics, and scoring systems.

ScreenScout - Movie Recommendation Engine [Hugging Face](#)   🔗 [GitHub](#)   *Jun 2025 - Present*
Next.js, TypeScript, FastAPI, scikit-learn, Supabase

- 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 **OMDb API** for real-time movie data collection, with robust error handling and data validation for seamless external API interactions.

Technical Skills

- **Languages:** TypeScript, Python, C++, JavaScript, HTML/CSS, SQL
- **Frameworks/Libraries:** Next.js, React, Node.js, FastAPI, Flask, SQLAlchemy, **Firebase Auth**
- **AI/ML:** scikit-learn, Pandas, NumPy, Matplotlib, TensorFlow, Transformers
- **Cloud & DevOps:** Docker, AWS (EC2, Amplify, S3, IAM), GCP (Cloud Build, Artifact Registry, Cloud SQL, Cloud Run, Cloud Functions), **Azure Web Services**, **Firebase App Hosting**, Jenkins, Render
- **Databases:** MongoDB Atlas, PostgreSQL, Redis, SQLite,Cloud Firestore

Certifications

- [Artificial Intelligence Fundamentals](#)   *IBM Developers Network*
- [Generative AI using IBM Watson X](#)   *IBM Developers Network*
    - **Capstone Project:** [Customer Feedback Analyzer](#) (Score: **100%**). Engineered a sentiment pipeline using **Logistic Regression**, Random Forest and **TF-IDF vectorization** (1000 features), achieving discriminative feature weights (0.27–0.86).
    - Deployed on **Hugging Face Spaces** ([Live Demo](#)) with interactive **Gradio** interface.
- [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*