

# Smarth Sood

INDIAN INSTITUTE OF TECHNOLOGY (BHU), VARANASI, INDIA

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## EDUCATION

<b>Indian Institute of Technology (BHU), Varanasi</b> 5 Year Integrated Dual Degree (B.Tech + M.Tech) in Biomedical Engineering	October 2022 - Present <b>CPI: 8.8/10</b>
<b>Mount Carmel School, Thakurdwara</b> Class XII: Council for the Indian School Certificate Examinations (CISCE)	2022 <b>95.75%</b>
<b>Mount Carmel School, Thakurdwara</b> Class X: Council for the Indian School Certificate Examinations (CISCE)	2020 <b>95.2%</b>

## SKILLS

**Programming Languages:** C++/C, Java, Python, JavaScript/TypeScript, SQL  
**Web, Databases and Frameworks:** NodeJS, ReactJS, NextJS, TailwindCSS, HTML, CSS, PostgreSQL, MongoDB, Prisma  
**Cloud and Devops:** AWS (EC2,ECS,Lambda,S3), Docker, Kubernetes, Serverless, Digital Ocean, Prometheus, Grafana, Git, Github  
**Core Concepts:** Full Stack Web Development, Devops, Object Oriented Programming, Operating Systems, Machine Learning, Data Structures and Algorithms

## EXPERIENCE

**Python Developer | Gokul Infocare Pvt Ltd** March 2024 - June 2024

- Created interactive **frontends and backends** using Tkinter, Streamlit and Figma designs for company's operations.
- Built an **Image-to-MCQ** Pipeline that automates document digitization and reduces assessment creation time by an estimated **70%**.
- Designed and implemented a Python-based **Hospital Appointment System**, improving scheduling efficiency by estimated **40%**.
- Boosted **data collection** speed by **60%** by developing optimized **web scraper** for company's internal analysis.

## PROJECTS

**Excalidraw - Real-Time Collaborative Drawing Platform** March2025 - April 2025

- Built a full-stack **Drawing Application** with **real-time multi-user** collaborative sessions featuring infinite canvas, zoom/pan, live sync, draw and export tools with latency of less than 200ms via **WebSockets**.
- Secured API and WebSocket endpoints using **JWT authentication**, **bcrypt-hashing** and custom **middleware** for authorization.
- Managed **monorepo** using **Turborepo** and **pnpm**, enabling shared types and unified database access reducing build time by 40%.

**Technologies:** Next.js, TypeScript, WebSocket, PostgreSQL, Prisma, Tailwind, Turborepo, pnpm, Zod, Canvas, AWS, Docker  
**Live Demo:** <https://draw.smarthsood.com> **GitHub:** [https://github.com/SmartSood/Draw\\_App](https://github.com/SmartSood/Draw_App)

**Invest IQ Financial Assistance App** May 2025 - June 2025

- Developed a **Financial Assistance** platform with **gamified modules**, progress tracking and reward-based quizzes.
- Integrated **OAuth**, two-way voice-to-text functionality, news and multilingual support via **Google Cloud APIs**.
- Engineered custom **RAG-based portfolio** and **trend analyzer** incorporating Relative Strength Index (**RSI**) and price charts using **Groq** API, achieving a 95% accuracy rate in predicting market trends on historical data.
- Engineered a RAG-based **chatbot** using **DeepSeek** to provide real-time, context-aware explanations of complex financial concepts.

**Technologies:** MERN, Tailwind CSS, Python, Google Cloud, Hugging Face, Groq, LLM, AWS, Docker  
**Live Demo:** <https://invest-iq-finance-demo.vercel.app> **Github:** <https://github.com/SmartSood/Invest-IQ-Finance-Demo>

**EEG-Based Biometric Authentication and Identification using Deep Learning (DRDO Project)** January 2025 - April 2025  
UG Research Project, IIT BHU - Supervisor: [Dr. Jac Fredo Agastinose Ronickom](#)

- Crafted a **CNN-based biometric authentication** system in Python and TensorFlow, successfully identifying **25** individuals.
- Innovated a two-run multi-task experiment by collecting EEG data across **six diverse cognitive domains**.
- Implemented **EEG preprocessing** pipeline using ICA, filtering, and segmentation for deep learning biometric authentication.
- Achieved **93.58% test accuracy** and **94% F1-score** using multi-task EEG features and session-wise generalization concepts.

**Technologies:** Python, EEG Preprocessing, Deep Learning (CNN), Numpy, Streamlit, MNE-Python, Scikit-learn  
**Project Report:** [Google Drive Link](#) **Github:** <https://github.com/SmartSood/UG-Work>

## PUBLICATIONS

**Diagnostic Classification of ASD Improves with Dynamic (FC) of fMRI Compared to Static FC** July2023 -December 2023  
Supervisor: [Dr. Jac Fredo Agastinose Ronickom](#)

- Conducted **fMRI analysis** on 112 subjects, distinguishing subjects with ASD from TD using sFC and dFC techniques.
- Applied advanced methods like MLP, XGBoost and LR and achieved **88.76%** accuracy on FC and **96.65%** on dFC.
- Wrote a research paper on it which is published at IBSIS-RMBS 2024 (61st Rocky Mountain Bio-Engineering Symposium).

**Publication Link:** [Conference Link](#) **Github:** <https://github.com/SmartSood/Research-Paper-Code>

## ACHIEVEMENTS AND HONORS

- Specialist on Codeforces |Maximum Rating: 1471 | Highest Rank: 1111 in Codeforces Round 1034 [Profile Link](#).
- Secured Platinum rank in WebDevelopment Hackathon organized byFlipr in a competition of more than 100 teams.
- Launched a personal portfolio website to showcase projects, achievements, and experience- [SmarthSood.com](#)
- Joint Secretary of Aavaran - The Fashion Club for 2024-2025 and member of DUGC and DPGC committee.
- Scored top 1% rank in IIT JEE Advanced, Mains, 1600 rank in the IISER Aptitude Test (IAT) and cleared exams such as NDA.
- Served on the organizing committee for India's second-largest Model UN conference, hosted at IIT (BHU), Varanasi, handling more than 1000 delegates across India.