

SAMARTH K J

[Email](#) | [LinkedIn](#) | [Github](#)

EDUCATION

Indian Institute of Technology, Madras

BTech, Civil Engineering, CGPA: **8.86**

Jun, 2026

Kendriya Vidyalaya, Malleshwaram

Grade 12, Percentage: **95.2**

May, 2022

Grade 10, Percentage: **96.0**

May, 2020

SCHOLASTIC ACHIEVEMENTS

- Secured **99.46%** ile in **JEE(M)** among 1M+ students
- Secured **AIR 5957** in **JEE(A)** among 150K+ students.
- Achieved **AIR 1473** in **KVPY** among 50K+ students
- Scored **324/390** in **BITSAT**, was offered BE in CS at BITS Pilani

RELEVANT COURSEWORK

- Deep Learning
- DL in Speech*
- Convex Optimization*
- Differential Equations
- ML Foundations
- Linear Optimization
- Probability & Statistics
- Series and Matrices

*Ongoing

EXPERIENCE

Fractal AI Research | AI Research Intern

May 2025 – Aug 2025

- Finetuned **SigLIP2** using **DeepSpeed ZeRO** with a **novel aesthetics-based dataset** for reward modelling.
- Orchastrated **cross-attn** and **CFG-based guidance methods** to improve image fidelity of DiTs by $\approx 10\%$.
- Curated OCR data** to finetune DiT using **Florence-2** with **GRPO**; increased text-gen accuracy by **24.5%**.

Massachusetts Institute of Technology | Student Researcher

Jan 2025 – May 2025

- Built an **agentic system** to aid **memory** with **AI**; submitted to the **flagship conference ACM CHI 2026**.
- Built a **novel data pipeline** on Python FastAPI server **reducing the latency by 80%** using concurrency.
- Evaluated transcripts with **WER** and **CER**, achieved **4.53%** and **1.54%**. Used **LLMs** to flag unsafe outputs.

Dirac Labs | ML Associate

Feb 2024 – Dec 2024

- Implemented a **SciML-based NN** in the Julia language for real-time edge applications at **<5ms inference rate**.
- Strategised a data pipeline on **Google Cloud** for the pre-processing, transformation & storage for **>5TB** of data.
- Built an **RF model** to detect soil type over ground using hyperspectral satellite data with an **accuracy of 95.7%**.

PROJECTS

Black Scholes Option Pricing | *SciPy, NumPy*

Mar 2025

- Calculated price of **Call & Put** Options using **Black Scholes** model; tested it with **dynamic-delta hedging**.
- Used **Monte Carlo** simulations with **GBM** to identify stock-path with highest probability for option pricing.

CAPM and Markowitz Model | *yfinance, SciPy, Matplotlib*

Apr 2025

- Built an optimization model with **Markowitz's mean-variance framework** to maximize the **Sharpe Ratio**.
- Implemented **CAPM** with regression analysis to find **Beta**; evaluated stock's sensitivity to market movements.

Credit Card Fraud Detection | *Pandas, Scikit-Learn, Optuna*

Aug 2024

- F1 score of 0.89** was achieved with **CatBoost** to detect fraudulent accounts using data from **608K+** accounts.
- Data preprocessing techniques including **SMOTE**, **ANOVA**, **Chi-Square test**, etc. were used before modeling.

StrInt: Structural Intelligence | *LangGraph, LangChain, Streamlit, ragas, FlagEmbedding*

Aug 2025 – Present

- Built an **agentic AI system**, using **LangGraph & Gemini API** to design structures acc. to Indian Standards
- Improved context relevance by **23.4%** via **reranking**, **smart-chunking** & extracting with **MLLM-based OCR**.
- Achieved **0.96 faithfulness**, **0.92 answer relevancy** and **0.79 context relevancy** with **ragas** evaluation.

Earthquake Response Spectrum Prediction | *PyTorch, Pandas, Matplotlib*

Jan 2024 – May 2024

- Built **GenAI models** like **CGAN & VAE** to predict Structural Impact of Earthquakes using 6 EQ params.
- Implemented a **novel-loss** function for **CGAN** in PyTorch. Improved the test-data **R²** value to a SoTA **0.91**.
- Used XGBoost, FFNNs and BNNs to predict ground acceleration values to get **R² values of 0.82, 0.84 & 0.87**.

COMPETITIONS

- Secured **1st place** in Buildathon; used **Flutter** to create **OCR & SQLite** based data digitization application.
- Headed a 5-member team & devised strategy** to bag **1st place** in Mock Auction among **345** participants.
- Devised innovative AI solutions to win **3rd place pan-India** in **L&T Smart City Challenge** among **180+** teams.

POSITIONS OF RESPONSIBILITY

Professional Shows, Saarang | Deputy Coordinator

Jun 2023 – Apr 2024

- Managed the main event with **80k+ footfall** including artists like **Farhan Akhtar and Matisse & Sadko**.
- Spearheaded publicity and sales for the online degree section of IIT Madras, comprising of **68K+ students**.

Corporate Relations: E-Cell | Assistant Manager

Dec 2022 – Mar 2023

- Solely responsible for negotiating a deal in kind worth **INR 2.5L** from **Kokuyo Camlin** kits for E-Summit.
- Managed the **branding and advertisement** of sponsors during E-Summit and **chaperoned VIP delegates**.