

# SAMARTH K J

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

## EDUCATION

<b>Indian Institute of Technology, Madras</b> <i>BTech, Civil Engineering, CGPA: 8.86</i> <i>Jun, 2026</i>	<b>Kendriya Vidyalaya, Malleshwaram</b> <i>Grade 12, Percentage: 95.2</i> <i>Grade 10, Percentage: 96.0</i> <i>May, 2022</i> <i>May, 2020</i>
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## SCHOLASTIC ACHIEVEMENTS

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

## RELEVANT COURSEWORK

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

## EXPERIENCE

<b>Fractal AI Research</b> <i>AI Research Intern</i>	<b>Bengaluru, India</b> <i>May 2025 – Present</i>
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- 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%**.

<b>Massachusetts Institute of Technology</b> <i>Student Researcher</i>	<b>Cambridge, Massachusetts, USA</b> <i>Jan 2025 – May 2025</i>
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- 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 **3.53% and 1.24%**. Used **LLMs** to flag unsafe outputs.

<b>Dirac Labs</b> <i>ML Associate</i>	<b>Madison WI, USA</b> <i>Feb 2024 – Dec 2024</i>
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- 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

<b>StrInt: Structural Intelligence</b>   <i>Python, LangGraph, LangChain, Streamlit</i>	<b>Aug 2024 – Present</b>
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- Built an **agentic RAG** system leveraging **FAISS vectorstore** to design structures using Indian Standards.
- Used **LLM-as-a-Judge** evaluation for each component. Currently buliding data pipeline for **QLoRA** finetuning.

<b>Earthquake Response Spectrum Prediction</b>   <i>Python, PyTorch, Pandas, Matplotlib</i>	<b>Jan 2024 – May 2024</b>
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- 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 **R<sup>2</sup>** value to a SoTA **0.91**.
- Used XGBoost, FFNNs and BNNs to predict ground acceleration values to get **R<sup>2</sup> values of 0.82, 0.84 & 0.87**.

<b>Credit Card Fraud Detection</b>   <i>Pandas, Scikit-Learn, Optuna</i>	<b>Aug 2024 – Present</b>
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- **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.

## 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

<b>Professional Shows, Saarang</b> <i>Deputy Coordinator</i>	<b>Jun 2023 – Apr 2024</b> <i>IIT Madras</i>
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- 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**.

<b>Corporate Relations: E-Cell</b> <i>Assistant Manager</i>	<b>Dec 2022 – Mar 2023</b> <i>IIT Madras</i>
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- 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**.