



# Krishna Kumar Singh

Dual Degree (B.Tech. + M.Tech.)

Electrical Engineering

Indian Institute of Technology Bombay

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## EDUCATION

Degree/Certificate	Institute/Board	CGPA/Percentage	Year
Electrical	Indian Institute of Technology Bombay, Mumbai	8.43	2027
Senior Secondary	Police Modern School, Ghaziabad	92.6%	2022
Secondary	Police Modern School, Ghaziabad	95%	2020

Pursuing Minor degree in Centre for Machine Intelligence and Data Science, IIT Bombay

## SCHOLASTIC ACHIEVEMENTS

- Secured in the **top 5** percentile out of more than 0.15+ million students in the **JEE Advanced Exam** (2022)
- Attained a score of **100** in the subject of **Mathematics** during the Class 12 CBSE examination (2022)
- Secured **1st position** in the **CBSE High School Examinations 2020** among students within the school (2020)
- Acquired **1st position** in the **CBSE Higher School Examinations 2022** among students within the school (2022)

## PROFESSIONAL EXPERIENCE

### Satellite Segmentation: Land Cover & Solar Panels | MapmyIndia | Summer Internship (May'25 – Jul'25)

- Fine-tuned a **YOLOv8-based** segmentation model for accurate segmentation of solar panels in satellite imagery
- Optimized a **U-Net (ResNet34 backbone)** model to segment **7 key land cover classes** from satellite images
- Trained both models on their respective custom datasets, then utilized the saved model files to generate overlay images, mask outputs, and **GeoJSON files** with real-world coordinates for accurate geospatial visualization
- Packaged both models into a deployable **PyInstaller CLI tool**, enabling segmentation via a single command

## KEY PROJECTS

### AI Guard Agent | EE782: Course Project | Prof. Amit Sethi

(Oct'25 - Nov'25)

- Developed a multi-modal **AI Guard Agent** integrating **face recognition** (DeepFace, Facenet), **video capture** (OpenCV), **voice commands** (Google Speech Recognition API) for automated room security and intruder detection
- Implemented **context-aware AI** using **Llama3.2:1b** (Ollama API) with gTTS, enabling dialogue, control, handling
- Engineered **performance tracking** capturing face recognition, intruder detection, voice commands, video evidence
- Integrated **real-time notifications** via **Telegram** and **Gmail**, providing alerts, snapshots, updates during intruders

### MVPDR: Multi-View Prototype Recognition | Prof. Amit Sethi

(Sep'25 - Nov'25)

- Developed a **multi-view prototype-based** plant disease classifier using **CLIP backbones** (ResNet-50, ResNet-101, ViT-B/32) with **lightweight learnable adapters** ( 500K parameters) for highly efficient and scalable inference
- Engineered **visual (K-means)** and **textual prototypes** fusion, enabling **few-shot** and **zero-shot classification**
- Achieved **85.36% accuracy** on PlantDoc and 75.7% in 20-shot settings, demonstrating **data-efficient performance**
- Validated across datasets (PlantDoc, PlantVillage, PlantWild) and **backbones, generalization, reproducibility**

### Deep RL for Finance | Finsearch | Finance Club, IIT Bombay

(Jun'24 - Jul'24)

- Explored the use of **Reinforcement Learning** (RL) techniques in stock trading to maximize investment returns
- Investigated both Traditional and **Deep RL** methods to efficiently tackle market instability and optimize stability
- Successfully used **Q-learning Temporal Difference strategy** to maximize 10-year investment returns on NIFTY50

### Intrusion Detection System (IDS) | Seasons of Code | WnCC, IIT Bombay

(Jul'23 - Aug'23)

- Developed an advanced Intrusion Detection System to capture and analyze **network traffic** for suspicious activities
- Utilized **Scapy** and **Wireshark** for real-time packet capture, monitoring network traffic, and identifying anomalies
- Implemented machine learning models like **Naive Bayes**, **K-Nearest Neighbors**, and **Decision Trees** in NIDS
- Predicted network anomalies with high accuracy of **95%** using the deployed machine learning models effectively

## LEADERSHIP ROLES

### Finsearch Mentor | Finance Club, IIT Bombay

(Jun'24 - Aug'24)

- Mentored **12+** students in conducting a thorough critical assessment and enhancement of **Bond Valuation methods**
- Guided students on **Bonds fundamentals, Valuation methods**, and key factors influencing bond valuation
- Addressed common limitations and conducted practical **Bond valuation** assessments and comprehensive analyses

## EXTRACURRICULAR ACTIVITIES

- Completed a 5km marathon,representing Hostel demonstrating dedication to fitness and competitiveness (Mar'24)
- Engaged in a year-long cricket sports program organized by the **National Cadet Corps** (NCC) team (2022)
- Solved **200+ DSA problems** on LeetCode, demonstrating strong problem-solving and coding skills (2025)