



MAYANK AGRAWAL

Final Year Undergraduate

Department of Mechanical Engineering

Minor in CSE (Machine Learning, Systems, Algorithms)

Indian Institute of Technology Kanpur

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Examination	University	Institute	Year	CPI/%
Graduation	IIT Kanpur	IIT Kanpur	2026	8.7/10.0
Intermediate/+2	CBSE(XII)	Manav Rachna International School, Gurugram	2022	96.6%
Matriculation	CBSE(X)	Manav Rachna International School, Gurugram	2020	98.6%

Scholastic Achievements

- Conferred with **Academic Excellence** award by **IIT Kanpur** for being amongst the **top 10%** students,
- Secured All India Rank **2586** in **JEE Advanced** and **2362** in **JEE Mains** among the 1.2 million candidates,
- Recipient of the **Hyundai Hope Scholarship 2025** for proposing innovative solutions in the automobile industry,
- Completed 3 Minors in **CSE department - Machine Learning, Systems, Algorithms**,
- Led the **First Indian team** to qualify for **RoboCup MSL 2025**, held in Salvador, Brazil among **40+** countries,
- Secured **AIR 841** in **KVPY SA** Fellowship 2021 and **1364** in **KVPY SX** 2022, among 100,000 candidates,
- Awarded **Haryana Science Talent Search Scheme Exam (HScTSS) Scholarship** by Haryana Government,

Competitive Programming

- Achieved highest **CodeChef Rating - 2264 (6★)** with **Global Rank 3** and **India Rank 1** in **Starters 202 (Rated for 5★)**,
- Achieved highest **Codeforces Rating - 1668 (Expert)** with global rank **642** in **Codeforces Round 1046 (Div. 2)**,

Work Experience

Nomura | Mumbai

May'25 - Jul'25

Quantitative Investment Strategy (Index Structuring)

Received **Pre-Placement Offer** for exemplary performance

- Developed a **scalable automated system** for performance attribution, streamlining monthly pitchbook generation
- Built and backtested a **regime-based long-short strategy** across **G3 equity indices (S&P 500, EuroStoxx 50, Nikkei 225)**, incorporating **crisis-period robustness checks** in both similar and dissimilar market regimes.
- Designed a **backtesting framework** and evaluated **1,000+** combinations of equities and commodities
- Paper-traded a **\$1M multi-asset portfolio** employing dynamic entry and exit timing achieving a **sharpe of 2.4**
- Outperformed existing Equity Trend strategy, **↑ Sharpe** from **0.3** to **1.5** and **↓ Drawdowns** from **22%** to **15%**

Dentira

Dec'24 - May'25

Software Development Intern

- Refactored a legacy React app to a **modern, functional architecture** with **custom hooks**, enhancing code reusability
- Spearheaded the **migration** from **JavaScript** to **TypeScript**, leveraging static typing to reduce runtime errors
- Authored comprehensive **unit and integration tests** for the TypeScript codebase using **Jest** and **React Testing Library**, increasing test coverage to over **95%**

Skills

- Languages & frameworks:** C, C++, Python, Arduino, ROS2, Gazebo, Docker, SQL, HTML, SQL, Solidity, JavaScript
- Utilities:** Numpy, Pandas, Matplotlib, Markdown, OpenCV, PyTorch, scikit-learn, Git, TensorFlow, Bash, Excel, Pygame, ReactJS, TypeScript, Unity, Fusion-360, Blender, Bloomberg

Relevant Courses

Statistical Natural Language Processing*
Introduction to Machine Learning
Fundamentals of Computing

Data Structures & Algorithms
Algorithms II*
Complex Variables

Linear Algebra
Single Variable Calculus
Differential Equations

Embedded systems*
Partial Differential Equation
Introduction to Electronics

Research Experience

Ashby charts for polymers

Aug'25 - Present

Co-authored a manuscript for journal publication

Prof. C. Chandrprakash, IIT Kanpur

- Developed a **novel** computational methodology in Python to generate the **first-ever 2D and 3D Ashby charts** for the **nonlinear elastic** properties of polymers
- Implemented advanced computational techniques, including **convex hull algorithms**, **piecewise cubic interpolation (PCHIP)**, and **Savitzky-Golay filters**, to accurately process and visualize complex material property boundaries

Autonomous Quadraped

Jan'25 - Apr'25

Mobile Robotics Labs | SURGE'24 IIT Kanpur

Prof. Shakti S. Gupta, IIT Kanpur

Nominated for **SURGE Fellowship** by IIT Kanpur

- Developed a system using **RealSense** depth cameras & detection models (**YOLOv7**, **DeepSort**, **Custom CNN**)
- Implemented and evaluated various path planning algorithms like **A***, **RRT**, **RRT*** for autonomous navigation
- Simulated path planning in **gazebo** & visualized in **Rviz2** using **nav2** along with real-time **SLAM** algorithm
- Achieved autonomous** following of target on simulation with **95% accuracy** in distance estimation of target

Projects

Aptures

Aptos Blockchain Challenge | InterIIT TechMeet 12.0 Nov'23- Dec'23

- Architected a zero and N day future trading platform on **Aptos blockchain** to provide a non-custodial trading environment
- Developed **Market Data APIs** & **Transaction APIs** for real-time insights & trade execution (current price, volume etc.)
- Ensured instant settlement of all trades, via **smart contracts** & **Cron Job** upon the expiry of 24-hour contracts
- Automated **risk mitigation** and **liquidation** for non-compliant margin requirements, minimizing default risk

Prototype Homegrown Autonomous Soccer Robot

Team ERA, RoboCup MSL, Prof. Indranil Saha

May'23 - Apr'25

- Implemented custom **probabilistic decision making** module for **PHASR** to determine **passing**, **shooting**, and **dribbling**
- Established dynamic path planning using **RRT*** algorithm & integrated the module with **ROS2** for efficient communication
- Explored and benchmarked performances of multiple **object detection** models like **YOLO**, **efficientnet** & **tensorflow lite**
- Created **sockets** between **Jetson** and **RPI5** to increase the data **throughput** while maintaining the speed of transfer

Life long Learning and Domain Adaptation

Course Project CS771 Prof. Piyush Rai

Aug'24 - Nov'24

- Implemented a **lifelong learning** system with a prototype based classifier & **pseudo-labeling** on over 10 unlabeled datasets
- Mitigated **catastrophic forgetting** with **domain adaptation (LDAuCID)** while maintaining **> 84%** accuracy
- Architected an efficient and end-to-end pipeline by upgrading the **deep feature extractor** to **ResNet50** with **PCA**

*: Ongoing