Suryaansh Jain
Computer Science & **Engineering**
Program: M.S (2027)

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Level	Degree	Institution	Year	GPA
Graduate	M.S	University of Massachusetts - Amherst	2027	-
Undergraduate	B.Tech	IIT Hyderabad	2025	3.91/4 (9.41/10)

Research Experience

Finding State Abstraction Functions for $c^{th}-$order Markov Process for STAR *(2025)*
Instructor | *Dr. Bruno Castro Da Silva* *University of Massachusetts Amherst*

- Working on learning $\phi-$functions such that the reduced state space is $c^{th}-$order Markov.
- Found theoretical conditions for ϕ and used autoencoders to learn appropriate ϕ function.
- Use these learned ϕ for efficient and more accurate off-policy learning.
- Plan to submit it to **ICML 2026**

Beyond Consensus: Mitigating the Agreeableness Bias in LLM Judge Evaluations *(2024-25)*
Instructor | *Dr. Ben Leong* *National University of Singapore*

- Extending LLM as a judge on subjective tasks using statistical modeling and regression.
- Came up with a novel method based on **IRT**, with latent variables that can be used to estimate the precision of the model.
- **First author** of paper submitted to **ICLR 2026**.

A bound for the cops and robber problem in terms of k-component order connectivity *(2023-24)*
Instructor | *Dr. Subrahmanyam Kalyanasundaram* *IIT Hyderabad*

- Bounded the cop number of graphs based on cover size, improving bounds for graphs with components of size less than k outside them.

FPT Algorithms for Graph Clustering *(2023, 2024)*
Instructor | *Dr. Subrahmanyam Kalyanasundaram* *IIT Hyderabad*

- Read the paper From Data Completion to Problems on Hypercubes: A Parameterized Analysis of the Independent Set Problem. Found some error with the proofs in the paper and suggested the authors to make the relevant changes. The authors acknowledged this error and revised the paper and acknowledged us in the new version.
- Extended the work done in the above paper to non-binary strings.

Approximate Algorithms for solving the closest sub-string and the p-string problem *(2024)*
Instructor | *Dr. Nitin Saxena* *IIT Kanpur*

- Tried to find an algorithm for the p-string problem based on a paper that gave an approximate algorithm for finding the closest string to a set of binary strings for the case of $p = 2$.

Inter Blockchain Communication *(2023)*
Instructor | *Dr.Kotaro Kataoka* *IIT Hyderabad*

- Funded by Toyota, the project focused on establishing communication between blockchains using the OTEx method.
- Worked on linking private and public blockchains and decentralized storage for Asset and NFT ownership records.
- Published paper: "OTEx: Ownership Transfer and Execution Protocol for Blockchain Interoperability."

Academic Projects

Robustness of Object Detection Models to Adversarial Attacks | *Course: Computer Vision* *(2025)*

- Surveyed (Patch Attacks, Gradient Based Attacks) and Implemented new attacks (Edge-DPAttacks) on SOTA object detection models like YOLO and Faster-RCNN.

Graph Neural Networks and Diffusion Models for Graph Coloring | *Course: Adv. topics in DL* *(2024)*

- Made diffusion models and GNNs to color 4 colorable graphs. Achieved 10% error rate. Extended it to color arbitrary k colorable graphs.

Recommender Systems Using Deep Generative Models | *Course: Deep Learning* *(2024)*

- Surveyed multiple different SOTA recommender system papers like DiffRec, Diff4Rec and Contrastive Variational AutoEncoder for Sequential Recommendation. Presented these papers and suggested improvements.

RISC-V Disassembler | *Course: Computer Architecture* *(2022)*

- Implemented a RISC-V Disassembler written in C++ that takes as input machine code in binary or hex and outputs the corresponding RISC-V code.

Image manipulation DSL | *Course: Compilers-II* *(2023)*

- Implemented a DSL that aids in manipulating images that supports all BMP format images.
- The language allows the user to draw on images and apply convolution filters on them. It allows the user to define drawings that can be applied on images.

Paxos and Chubby | *Course: Computer Networks* *(2023)*

- Implemented the Paxos algorithm as described in the paper Paxos Made Simple and Paxos Made Moderately Complex.

- Implemented the Chubby algorithm as described in the paper The Chubby lock service for loosely-coupled distributed systems.

Stackoverflow Clone | *Course: Database management systems* *(2023)*
- Implemented the backend for the project. This worked to scale and it used the data from **stackoverflows internet archive**.
- It was built using nodeJS and connected to PostgreSQL to store and manage data.

Firewall and Bandwidth Limiter | *Networking Club at IITH, Kludge* *(2023)*
- Developed a Firewall and Bandwidth Limiter using NFQUEUES in C++ for router-based network control.
- It sets speed limits, data caps (daily/weekly/monthly), and manages network access by blocking/allowing specific ports, traffic types (TCP/UDP), or IP addresses.

Wordle on Aptos Blockchain | *Inter-IIT Tech Meet* *(2023)*
- Built Wordle completely on the Aptos Blockchain. The contracts were written in Move.
- Used complex data compression algorithms to minimize the storage on chain to reduce costs.

Drone motor failure detection | *Inter-IIT Tech Meet* *(2024)*
- Built an RNN based failure detection model to detect a motor failure based on sensor data alone.
- Also implemented this in c++ for this algorithm to run with PX4 on the drone hardware.

Internships

Bryt | *ML and Software Engineer | 10 weeks* *(2025)*
- Added functionality for section name aliasing and developed a conversational chatbot for student doubts using LLMs, requiring deep understanding and edits to over 100 codebase files.

CrowCanyon Systems | *ML and Software Engineer | 4 weeks* *(2023)*
- Worked on making a RAG model to answer user queries from users database of pdf documents.
- Explored using **LangChain, LangGraph** and a custom pipeline to build the RAG model.

Technical Skills

Programming	C++, C, Python, Java, Bash, Sed, Awk, Solidity, Move, Rust, Dart, ROS
Web Development	JavaScript, Flutter, Express, Bootstrap, aiosql, Django, fast-api, socket programming
Libraries	NumPy, Matplotlib, PyTorch, Pandas, TensorFlow, SpaCy, NLTK, Scipy, scikit-learn, openai, streamlit, OpenCV, cuda, docker, OpenGL, clip, diffusers, LangChain, LangGraph

Selected Courses Undertaken

Undergraduate	Theory of Computation, Discrete Math, Foundations of Machine Learning, Compilers, Database Management Systems, Computer Networks, Operating Systems, Computer Architecture, Linear Optimization, Game Theory and Mechanism Design, Information Theory, Deep Learning, Spectral Graph Theory, Convex Optimization, Reinforcement Learning, Cryptology, Quantum Computing, Computational Complexity, Advanced topics in Deep Learning, Computer Vision, Communication Complexity, Approximate Algorithms, Topics in Combinatorics, Calculus, Linear Algebra, Probability & Statistics, Transform Techniques
Graduate	Advanced topics in ML, RL, Complexity Theory

Scholastic Achievements

- Received **OnePlus-Oppo Genius+ scholarship** awarded to **6 students** across India, the top 2 from IIT Delhi, Hyderabad and Bombay *(2022)*
- **All India Rank of 311** in the IIT-JEE Advanced out of 1,55,000 candidates *(2021)*
- **All India Rank of 458** in the IIT-JEE Mains out of 10,00,000 candidates *(2021)*
- Awarded the **KVPY Fellowship twice** by the Government of India conducted by IISc Bengaluru *(2019, 2020)*

Olympiads

- Among the **top 60** students selected for the **Orientation Camp** for the IChO conducted by the Homi Bhabha Centre For Science Education (HBCSE) by securing **All India Rank of 27** *(2021)*
- **State topper** at the **National Science Examination in Physics conducted** by HBCSE *(2021)*
- Among the **top 300** students selected for **InPhO** the qualifying round for **IPhO**. *(2020)*

Extracurriculars

- **Teaching Assistant** for **Information Theory, Theory of Computation** *(2025, 2024)*
- Represented IIT Hyderabad at the prestigious **Inter-IIT Tech Meet** hosted by IIT Bombay. *(2024)*
- **Head** of **Web-Dev** Team in Milan *(2024)*
- **3rd Place** among all students in **math bowl (CMI) competition** at **Inter-IIT Tech Meet** *(2024)*
- Represented IIT Hyderabad at the prestigious **Inter-IIT Tech Meet** hosted by IIT Madras. *(2023)*
- **Gold** in **Milan Robotics Contest** (RoboArt) and **Web Dev Contest** (Intra-IIT contest) *(2023)*
- **Bronze** in **Milan Web Dev Contest** (Intra-IIT contest) *(2022)*
- Member of **software development club** (Lambda), **Networking club** (Kludge) *(2022)*