

Subhojit Ghosal

Entry Number: 2022MT61976

B.Tech & M.Tech in Mathematics & Computing

Indian Institute of Technology, Delhi

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ACADEMIC DETAILS

Year	Degree/Board	Institute	CGPA/(%)
2022-2027	Dual Degree in Mathematics & Computing	Indian Institute of Technology, Delhi	9.12
2022	CBSE XII	St. Paul Jr College	92.67%
2020	CBSE X	Kendriya Vidyalaya	94%

INCOMING INTERNSHIP

Atlas Research - Quant Researcher Intern May 2026 – Jul 2026

RESEARCH PROJECTS

Indian Institute of Technology, Delhi May 2025 – Jul 2025

Stateless Model Checking of Concurrent Systems, Supervisor: Prof. Subodh Sharma

- Studied **Dynamic Partial Order Reduction (DPOR) Algorithm** to mitigate the **NP-hard combinatorial explosion problem** in thread interleavings by reducing the explored state space w.r.t. safety properties, enabling efficient verification.
- Reduced time complexity from $\mathcal{O}(m^r)$ (naïve interleaving) to $\mathcal{O}(C \cdot \text{poly}(n))$, where C is the number of equivalence classes.
- Currently developing **view-equivalence**, novel and coarser than Mazurkiewicz equivalence class used in DPOR.

Carnegie Mellon University, Pennsylvania USA (remote) Dec 2024 – Jan 2025

LRS Strategy in Global Markets, Supervisor: Prof. Vipul Goyal

- Studied and implemented **Leverage Rotation Strategy (LRS)**, backtested on Indian, US, Japanese and European Markets.
- Built a robust backtesting engine and found that a 2x LRS delivered a 19.0% annual return with 24.9% volatility and -78.7% max drawdown, outperforming static 2x leverage (14.3% return, 37.8% volatility, -98.8% drawdown).

TECHNICAL ACHIEVEMENTS

- Secured **AIR 59** (World Rank 230) in **Facebook Hacker Cup** among 13000+ participants
- Secured **AIR 151** in **IICPC Codefest** among 13000+ participants across all IITs
- Actively participated in Codeforces contests, **rated 1740+** Expert on Codeforces, & **1900+** on CodeChef
- Secured **1st position** in **Mystry Planet** by **Jane street** solving puzzles and floor trading, **1st position** in **Codemia** sponsored by **Jane Street** a math competition, and **1st position** at **QRT Quant Quest Data Challenge**.
- Qualified for Nationals and achieved Gold level in the **WorldQuant - International Quant Championship**.
- Top-10 rank in **Mathemania - IIT Kanpur**, an inter-IIT non-routine mathematics contest with 200+ participating teams.

SCHOLASTIC ACHIEVEMENTS

- **IIT Delhi Merit Prize Award** for being in **top 7%** in sem 2, sem 3 and sem 6, **Dept rank 3** at end of sem 6
- **Regional Mathematics Olympiad (RMO)**, 2019-20, securing among **top 30 candidates** all over India KVS
- **Indian Olympiad Qualifier in Physics (NSEP)** - Merit, 2021-22, awarded as **State Topper** of Maharashtra
- **National Standard Examination in Junior Science (NSEJS)** - Merit, 2018-19, among **top 40 candidates** all over Maharashtra
- **All India Rank 720** in JEE-Mains, 2022 from among **more than 1,100,000 candidates** from all over the country
- **Kishore Vaigyanik Protsahan Yojana (KVPY)** Scholar 2 times, securing **All India Rank 503** over 100,000 candidate

PROJECTS

- **Virtual Memory Management and Process Scheduling in Linux** - Prof. Dalu Jacob (Sept 2025)
 - Implemented custom **malloc** and **free** with support for contiguous and randomized allocation patterns
 - Designed and implemented process schedulers including FCFS, SJF, Round Robin, and MLFQ.
- **Bipartite Graph Attention Network for Personality Prediction** - Prof. Sayan Ranu (March 2025)
 - Modeled data as a user-product **bipartite graph** and designed a graph attention architecture to incorporate the bipartite nature.
 - Leveraged **residual connections** and **LayerNorm** to aggregated multi hop neighbor features for stable deep message passing.
 - Secured 1st rank in class with **97% F1 Score**, outperforming standard vanilla GNNs, GCNs & GraphSAGE (70-80% F1).
- **Influence Maximization in Social Network** - Prof. Sayan Ranu (Feb 2025)
 - Solved the NP hard influence maximization problem with **CELF++**, under the IC model, achieving the **63% spread guarantee**.
 - Reduced complexity from $\mathcal{O}(NkR)$ to $\mathcal{O}(k \log N + nR)$ using **lazy forward updates**, **100x speedups** on 1M node graphs.

KEY COURSES DONE

Statistical Methods, Probability & Stochastic Pro, Analysis & design Of Algorithms, Data Mining, Machine Learning, Discrete Mathematical Struc, Data Structures And Algorithms, Macro Economics, Digital Electronics, Optimization Methods & Appl, Computer Architecture, Graph Theory,