Ishank Agrawal

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EDUCATION

Massachusetts Institute of Technology (MIT) .... **September 2022 - May 2025**
Undergraduate SB degree.   **GPA 5.0**
Coursework:

Non-Asymptotic Statistics	Deep Learning	Software Performance	Applied Cryptography and
Stochastic Processes	Quantitative Methods in	Engineering	Cybersecurity
Inference and information	Natural Language Processing	Operating Systems	Design and Analysis of
Theory	Tiny ML and Efficient	Computation Structures	Algorithms
	Computing		

WORK EXPERIENCE

Graviton Research Capital .... **June - August 2023**
Quant Research Intern.
   Alpha research on index options (NIFTY BANK). Utilized shallow neural networks incorporating volatility into models and proposed novel methods for options comparison. Several models incorporated into production.

ANE Support for TinyChatEngine .... **January 2024 - Current**
With Prof. Song Han at MIT Hanlab. Use Apple's Neural Engine to improve speed and performance of TinyChatEngine for Apple devices. In development.

RESEARCH

Information Learning in Communication Channels .... **January 2023 - Current**
With Prof. Lizhong Zheng at MIT's Research Laboratory of Electronics (RLE). Showed H-score networks can be used for efficient inference in MIMO Channels. Working on paper exhibiting results.

Imposing Uniformity through Poisson Flows .... **November - December 2023**
For Prof. Isola's 6.S898 Deep Learning class. Used Poisson flows to understand effects of uniformity on well-aligned feature representations. Continuing research post-class. blog repo

Hybrid Attention-Retention Networks .... **November - December 2023**
For Prof. Yoon Kim's 6.861 Advanced NLP class. Mixed attention retention heads for faster inference time without losing model perplexity. paper poster repo

PROJECTS

Fast Neural Style Transfer .... **November - December 2023**
For Prof. Song Han's 6.594 Efficient Computing class. Proposed an arbitrary encoder architecture for Adaptive Instance Normalization (AdaIN) style transfer, and applied neural compression techniques. app paper repo

TEACHING

MIT 6.S095 Intermediate Probability Problem Solving .... **January 2024**
Instructor for Advanced Track, over IAP 2024

MIT 6.437 Inference and Information Theory .... **February - May 2024**
Teaching Assistant for Spring 2024, grad level course.

OLYMPIADS

- **IPHO - USA Team Alternate 2021**
- **Indian IMO Training Camp 2019**
    Top 30 in INMO
- **USA IPhO Training Camp 2021**
    Top 30 in USAPhO
- **USAMO 2021 - Top 25**

AWARDS

- **Asian Pacific Mathematical Olympiad - Bronze**
- **Online Physics Olympiad 2021 - Gold**
- **IF Sharygin Geometry Olympiad Awardee**
- **Sir Issac Newton - 18th in the world**
- **JEE Advanced All India - Rank 333**
- **William Lowell Putnam Competition 2022 - Top 500**

SKILLS

Technical Skills: ML (PyTorch, Tensorflow), performance engineering, operating systems, C/C++, Python,
Languages: English (native), Hindi (native), Spanish (intermediate)
Hobbies: Poker, dance, running, basketball