

# Ishaan Goel

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## Summary

Mathematics researcher and AI developer with deep quantitative foundations. Seeking to apply expertise in generative AI and stochastic modeling to solve complex problems in Natural Language Processing and Quantitative Finance.

## Education

**Illinois Institute of Technology** (3.73/4.00) Aug 2022 – Present  
Dual B.S. Applied Mathematics and Data Science, Finance Minor  
M.A.S. Artificial Intelligence  
*Heald and STEM+ Scholarships Recipient*

## Relevant Coursework

**Math:** Probability, Linear Optimization, Stochastic Processes, Graph Theory, Monte Carlo Methods in Finance, SPDEs, Real Analysis, Abstract Algebra, Combinatorics, Dynamical Systems, Functional Analysis (audit)  
**AI/ML:** Machine Learning, Statistical Learning, Natural Language Understanding, Artificial Intelligence, Information Retrieval, Data Mining, Algorithms, Database Organization, Game Theory (audit)  
**Finance:** Economics of Capital Investments, Principles of Economics, Accounting  
**Planned (Spring 2026):** Quantitative Risk Management, Stochastic Analysis, Statistics, Data Science Projects

## Experience

**Illinois Institute of Technology, College of Computing** Chicago, IL  
*Research Assistant* May 2025 – Present  
*Under Dr. Michael Pelsmajer*  
Making a Markov Chain sampler in Python to generate uniform random hypergraphs with the same  $k$ -core sequences.

**Illinois Institute of Technology, Department of Applied Mathematics** Chicago, IL  
*Research Assistant* Aug 2024 – Present  
*Under Dr. Igor Cialenco, NSF-funded research*  
Applying concepts from stochastics, reinforcement learning and game theory to model groundwater rights pricing and assess policy impacts for water markets by integrating mathematical theory with hydrological and economic data.

**PeopleStrong Technologies Ltd.** Gurugram, India  
*Intern* Jun 2025 – Jul 2025  
Built a scalable RAG-based system for Automated Ticket Resolution, enabling document-grounded Q&A for 1,000+ employees and reducing index testing time by over 200x (weeks to hours). Gained hands-on experience in deploying production-ready agentic AI systems and accelerating iteration cycles through automation and containerization.

*Intern* Jul 2024 – Jul 2024  
Designed and deployed a scalable LLM-based chatbot with an agentic architecture integrating 5+ RAG systems, validated via A/B testing and approved for company-wide rollout.

## Projects

**Natural Language Understanding Projects | NLP, Python** Aug 2024 – Dec 2024  
Built NLP models from scratch: a probabilistic language model, a Naïve Bayes classifier, and a  $k$ NN classifier.

## Leadership Roles

**President**, Machine Learning at Illinois Institute of Technology (ML@IIT) Jan 2023 – Present  
Scaled organization from small group to 250+ active participants, hosting workshops and speaker events on AI/ML.

**Vice President**, Society for Industrial and Applied Mathematics (SIAM) Chapter at IIT Dec 2022 – Present  
Spearheaded initiatives connecting students to research opportunities in applied mathematics by hosting professor talks and organizing networking events for students across multiple disciplines related to mathematics.

## Skills

**Programming:** Python, R, Julia, C++, Java,  $\text{\LaTeX}$ , HTML, CSS, SQL, Mathematica, MATLAB  
**Python Stack:** PyTorch, scikit-learn, NumPy, pandas, matplotlib, NetworkX  
**R Stack:** tidyverse, caret, rpart, glmnet, e1071, keras  
**Spoken Languages:** English, Hindi-Urdu, Mandarin Chinese, Spanish, Modern Standard Arabic, Punjabi