

# Grace Yuan

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## Education

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### Massachusetts Institute of Technology (MIT), Cambridge, MA

B.S. in Mathematics & AI and Decision-Making (Double Major); MEng in EECS (Concurrent)

Expected in 05/2027

GPA: 5.0/5.0

- **Relevant courses:** Deep Learning, Reinforcement Learning, Quantitative Methods for NLP, Computer Vision, Robotics, Machine Learning, Representation and Inference in AI, Theory of Computation, Algorithms, Stochastic Processes, Fundamentals of Statistics,
- **Skills:** Python, PyTorch, JavaScript, MySQL, Pandas,  $\text{\LaTeX}$ , GitHub, Hugging Face

## Experience

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### Research Intern, Harvard Medical School (Rajpurkar Lab) (Cambridge, MA)

Sep 2025 – Present

- **First Author**, “Do Mixed-Vendor Multi-Agent LLMs Improve Clinical Diagnosis?” (Accepted as EACL 2026 HeaLing Workshop Oral).
- Designed mixed-vendor systems (o4-mini, Gemini, Claude) to mitigate correlated failure modes in medical reasoning.
- Achieved SOTA accuracy on RareBench/DiagnosisArena by pooling complementary model inductive biases.

### AI/ML Intern, Microsoft (Redmond, WA)

May 2025 - August 2025

- Developed a multilingual multiclass embedding-based classifier with dynamic k-means clustering; Improved recall by 20% and F1 by 13% compared to the existing English-only baseline model.
- Built a diagnostic AI agent that aggregates daily error logs, performs automated root-cause analysis, and delivers concise reports to the AI Agent team.

### Research Intern, IBM Research & MIT CSAIL (Cambridge, MA)

Feb 2025 - Present

- Collaborate with IBM researchers under Prof. Antonio Torralba’s supervision to investigate the internal mechanisms of LLMs.
- Visualize and analyze internal representations to elucidate how model components interact to produce specific outputs.

### SERC Research Scholar, MIT Schwarzman College of Computing (Cambridge, MA)

Sep 2024 – May 2025

- Led research on social bias in LLM-driven tabular classification, targeting high-stakes sectors such as finance, healthcare, and hiring.
- Analyzed how stereotypes and demographic attributes influence classification outcomes in advanced models like Llama and DeepSeek.

### ML Intern, Far Eastern Group (Taiwan)

June 2024 – August 2024

- Developed machine learning and deep learning models to optimize energy efficiency in LNG dual-fuel bulk carriers.
- Processed and analyzed data consisting of over 3,000 different features to enhance model accuracy and performance.

### Researcher, MIT Computer Science and Artificial Intelligence Laboratory (Cambridge, MA)

Feb 2024 – Dec 2024

- Analyzed the performance of AI models in scientific literature and contributed to an AI model database for open-source democratization.

### Lab Assistant and Grader, MIT (Cambridge, MA)

Feb 2024 – Dec 2025

- Assisted in MIT courses including “Theory of Computation” (Grader), “Introduction to Machine Learning” (LA), “Introduction to Algorithms” (Grader), and “Fundamentals of Programming” (LA), guiding students through assignments and labs.

## Projects

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### Using Knowledge Graph Embeddings to Solve Reversal Curse

Nov 2024 – Dec 2024

- Mitigated the “Reversal Curse” by integrating Knowledge Graph embeddings and symmetry-aware training to enable bidirectional logical inference in LLMs.
- Developed a model-agnostic methodology that improves reverse-relationship reasoning without requiring architecture-level modifications.

### Layer-wise Analysis of FinBERT Embeddings for Enhanced Financial Sentiment

Oct 2024 - Dec 2024

- Conducted a comprehensive layer-wise evaluation of FinBERT and BERT embeddings for financial sentiment classification, using UMAP visualization to inspect intermediate transformer layers

## Key Awards

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- The 84th William Lowell Putnam Mathematical Competition (the Putnam); Top 500 Dec 2023
- International Mathematical Olympiad (IMO); Honourable Mention; Maryam Mirzakhani Prize (best female in Oceania) July 2022
- European Girls' Mathematical Olympiad (EGMO); Gold Medal (Rank 6th globally) April 2022