ANDREW HAH

+1 (929) 319-6525 | andrewhah@uchicago.edu | **andrewhah.com** | **[LinkedIn](http://linkedin.com)**

EDUCATION

University of Chicago   **Expected 2027**
- *B.S. in Mathematics with Honors & B.S. in Computer Science with Honors*
- **Cumulative GPA:** 3.8/4.0 | **Major GPA:** 3.9/4.0
- **Relevant Coursework:** Machine Learning (grad), Algorithms (grad), Database Systems, Systems Programming, Markov Chains, Honors Discrete Math, Abstract Linear Algebra, Accelerated Analysis in Rn

RESEARCH/WORK EXPERIENCE

APEX Lab   **Chicago, IL**
Research Assistant | Advised by Prof. Shannon Heald   **January 2025 - Present**
- Built an optimized PyTorch pipeline on Slurm to batch-extract context embeddings from a 70 B-parameter LLM; computed cosine similarity matrices and hierarchical clustering, validating semantic structure in embedding space.
- Integrate LLM embeddings with quantitative analyses of human behavioral and neuroimaging data, relating AI representations and empirical patterns.

UChicago Department of Mathematics   **Chicago, IL**
Researcher | Advised by Prof. Alexander Razborov   **November 2024 - Present**
- Using entropy optimization techniques on graphons (graph limits) to investigate open problems such as the jump problem and Turán-type density thresholds.
- Exploring connections between extremal combinatorics and statistical physics, leveraging entropy optimization to model phase transitions and emergent structure in large-scale networks.

UChicago Department of Computer Science   **Chicago, IL**
Research Assistant | Advised by Prof. Junchen Jiang   **Mar 2024 - Nov 2024**
- Helped develop an open-source Knowledge Delivery Network (KDN) achieving 8x speedup and cost reduction for LLM apps through efficient caching and delivery mechanisms.
- Fully integrated the frontend and backend of this project for use-case experimentation and presentation.

Cornell University Department of Global Development   **Remote**
Researcher | Advised by Prof. Parfait Eloundou-Enyegue   **July 2022 - Mar 2023**
- Applied statistical analysis to uncover new quantitative evidence for the non-linear relationship between time spent studying and depression, and the interaction effect of students' years in school over the relationship between gender and depression level.   **[Paper]**

REU EXPERIENCE

UChicago Mathematics REU   **June 2024 - Aug 2024**
- Authored comprehensive **[paper]** on lattice-based cryptography, focusing on computational complexity and the hardness of cryptographic problems such as SIS, LWE, and their ring-based variants

PROJECTS

Satellite Imagery to Predict House Prices   **[Project]**
- Engineered a combined, hybrid neural network model integrating both tabular data and image data, leveraging the powerful feature extraction capabilities of a pre-trained Inception model for nuanced insights.
- Obtained and cleaned dataset through web-scraping of online real estate marketplace Zillow.

SKILLS & INTERESTS

Technical Skills: Python, C, Rust, PostgreSQL, PyTorch, pandas, NumPy
Interests: Squash, Tennis, Poker, Abstract Art, Fashion, Philosophy