# Aryan Gupta

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## EDUCATION

**University of Illinois Urbana-Champaign** — Urbana, IL
*Bachelor of Science, Computer Engineering.* — May 2028
Relevant Coursework: Discrete Structures, Linear Algebra, Statistics & Probability, Economics & Agriculture

**James B. Conant High School** — Hoffman Estates, IL
Hack Club, National Honor Society, Business Professionals of America — 2024

## EXPERIENCE

**University of Illinois Urbana-Champaign** — Urbana, IL
*Undergraduate Mathematics Researcher Assistant* — Sep 2024 – Present

- Processed 10+ GB of satellite and weather data for crop yield prediction and annual revenue estimation of popular stores with a high accuracy rate
- Investigated genetic algorithms, including neuroevolution, to test their applicability to modern-day interactions using a game-theoretic approach

**University of Chicago** — Chicago, IL
*Research Assistant* — Jun 2023 – Sep 2024

- Co-authored and presented 2 peer-reviewed research papers at the ACM CHI conference focusing on integrative haptics and wireless power transmission
- Streamlined data collection processes, leading to a 75% reduction in study time through automation
- Automated data collection through the use of IRB-adhering mechanized study protocols, allowing for statistically significant findings with errors of less than 5%

## LEADERSHIP

**Run for Water** — Schaumburg, IL
*Co-founder, Lead Web Developer, & Graphic Designer* — Jun 2022 – Sep 2023

- Led a community initiative raising $18,800, impacting over 2,700 individuals across multiple countries
- Managed full-stack development and deployed cloud-based payment systems, driving 85% of total fundraising efforts

## PROJECTS

**Markov Chain Monte Carlo Sampler** — Aug 2024

- Developed an MCMC visualization tool using the Metropolis-Hastings Algorithm, simulating complex sampling methods capable of extrapolation to real-world market dynamics and statistical arbitrage strategies

**Automatic Trash Sorting & Upcycling System** — Dec 2023 - Mar 2024

- Created a custom dataset to train an AI to sort between plastic types for recycling; utilized computer vision for live-context processing and super worms & custom plastic reshapers to convert plastic into usable products or feed

**OSINT Sentiment & Context Analyzer for Investments** — Oct 2023

- Developed a machine learning-driven sentiment analysis model for financial markets, achieving a 78% return on paper trades by applying NLP techniques on public financial forums for alpha generation

**Minimax Algorithm for Chess** — Jul 2022

- Created a perfect chess bot using an optimized Minimax algorithm and Alpha-Beta pruning, resulting in 12% lower latency speeds and a 100% win rate

**Entropy-based Sudoku Solver** — Jul 2022

- Improved Sudoku solving algorithms with a novel entropy-based waveform collapse approach, decreasing computation time by 40%

## PUBLICATIONS

**Haptic Permeability: Adding Holes to Tactile Devices Improves Dexterity** — Jun 2022 – Feb 2023
*https://doi.org/10.1145/3613904.3642156*

- Developed sensation-imitating electric tattoos to induce the feeling of touch while preserving real-world interactive capabilities, thereby allowing users to bridge the gap between virtual and real-world experiences

## SKILLS

**Technical:** Python (NumPy, Pandas), C++, SQL, TensorFlow, React, AWS Cloud