

# PHILENA LIU

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## EDUCATION

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### Massachusetts Institute of Technology

Cambridge, MA

Major: Mathematics with Computer Science

May 2024

**Coursework:** Algorithms (6.006), Real Analysis (18.100B), Probability and Random Variables (18.600), Weblab, BattleCode

**Extracurricular Activities:** Harvard-MIT Mathematics Tournament (HMMT): Marketing Staff, Borderline (Augmented Reality Murals): Publicity Co-Chair, Code For Good

### Adlai E. Stevenson High School

Lincolnshire, IL

GPA: 4.00, SAT Superscore: 1600, ACT: 36.

May 2020

National AP Scholar, Stevenson High School Ambassador

## EXPERIENCE

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### Pixonary - <https://pixonary.herokuapp.com/>

January 2021

Co-Creator

Lincolnshire, IL

- A collaborative take on a traditional drawing game. Created the multiplayer game within 2 weeks using React.js, Google OAuth, Express, MongoDB, Socket.io, Node.js, GitHub, MaterialUI, and CSS.
- Stores and displays user's past drawings through MongoDB. Allows for game settings customization and synchronous plays with Socket.io.

### UTOP - MITx Math Digital Content Development Team

September 2020 - Present

Digital Math Content Creator

Lincolnshire, IL

- Used Three.js, HTML Canvas, and Mathlets.js to create JavaScript applets for graphics aiding MIT's Multivariable Calculus online class. Created a visualization for a parametric function and its linear approximation.

### Program in Mathematics for Young Scientists (PROMYS)

June 2019 - August 2019

Camp Attendee, Exploration Lab Member

Boston, MA

- Researched in a team of 4 on the Fibonacci numbers, with our conjectures and proofs documented in LaTeX and presented to professors and other camp attendees. Proved, from its fundamental axioms, theorems in number theory like quadratic reciprocity.

### Math Outreach

October 2018 - March 2020

Organizer

Lincolnshire, IL

- Co-led school's first math olympiad training program, creating handouts/lectures on inequality proofs.
- Created and organized with 4 others the school's first Consortium Math Circle, teaching 50 middle school students on introductory modular arithmetic. Proctored and wrote problems for the Stevenson Math Consortium, an annual contest attended by around 100 middle school students.

## AWARDS

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### Math Prize for Girls (MPFG)

2018, 2019

- Placed 9th out of the top 285 girls in math from across US and Canada in 2018, and tied for 16th out of 268 in 2019 at the largest math prize for girls in the world.
- Qualified twice for the MPfG Olympiad, a 4 hour proof-based exam.

### MathWorks Math Modeling Challenge

2020

- Placed 3rd out of the 760 teams participating nationwide.
- Used Excel and MATLAB to model the transition from diesel to electric trucking with the Lotka-Volterra approach. Final paper was written with LaTeX and presented on in a video.

### John Benson Award Winner

2020

- Given to 6 students in the North Suburban Math League, of which over 50 Chicagoland schools participate, who "best exemplifies John Benson's love of mathematics and his passion to share his enthusiasm and knowledge with others."

## SKILLS

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**Technical:** Python, React.js, JavaScript, MongoDB, Java, LaTeX, HTML, CSS, Bootstrap, Socket.io