

# WILLIAM LIU

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## EDUCATION

**Princeton High School**, Princeton, NJ

Sept. 2022 - May 2026

Class of 2026, GPA: Un-Weighted 4.0/ 4.0, Weighted 4.38

**UCLA SCIP Pre-collegiate Summer Session**

June 2025 – August 2025

Enrolled in undergraduate-level Multivariate Calculus, received a final grade of A.

## RESEARCH

**Uncover Risk Drivers for Wildfire Occurrence with Machine Learning Approach, Prof. Robert Rouse, University of Cambridge**

Sept. 2025 – Feb. 2026

- Applied classification algorithms to predict the wildfire danger for a region with large scale wildfire occurrences.
- Identified the climate, the vegetation coverage, and the human behavior risk factors that contribute to wildfire predictions.
- Research paper on wildfire prediction accepted by the 39th FRUCT Conference (IEEE) and is under review by The National High School Journal of Science (NHSJS)

**An Improved Hyperbolic Neural Network for Tree Monitoring, Prof. Wei Li, Institute of Computing Technology, Chinese Academy of Science**

June 2025 – Oct. 2025

- Researched Tree Change Detection with Deep Learning Hyperbolic Siamese Network (HSN) trained on UAV-Camera-based dataset.
- Applied Hyperbolic Geometry to analyze the challenge of forest monitoring in identifying extrinsic changes from intrinsic physiological changes.

**North Carolina Math Camp (NCMC) Advanced Session II**

July 2025 – August 2025

- Studied advanced topics on Multivariate Calculus, Topology, Linear Algebra, and Graph Theory.
- Wrote a research article on the derivation and application of Green theorem, Stokes' theorem, and the divergence theorem in vector calculus.

**Comparative Study on the Pricing Effectiveness of Corporate Bond Pricing Models, Prof. Mete Soner, Princeton University**

June 2024 – Nov. 2024

- Applied option pricing models to price convertible bond, analyzed factors causing discrepancies between theoretical prices and market value.
- Zhu, Z., Liu, W., Cao, J., & Chen, K. (2025). Published on Nov. 2025 *Advances in Economics, Management & Political Sciences*.204(1). DOI: [10.54254/2754-1169/2025.29744](https://doi.org/10.54254/2754-1169/2025.29744)
- Accepted by the 4th International Conference on Business and Policy Studies (CONF-BPS 2025)

## LEADERSHIP

**Princeton High School Math Team Leadership**

Sept. 2023 – Present

- Organized Math competition field trips to HMMT, ARML, PUMAC, and SMT as team lead.
- Organize the Princeton High School's first-ever Princeton Math Tournament for grades 3-8 participants. Secured a venue, reached out to 150 sponsors to raise \$4800 funding, wrote original problems, and coordinated logistics for nearly 450 participants from across New Jersey

**Princeton High School Card Games Club, Founder & President**

Sept. 2023 - Present

- Recruited 2 Vice-Presidents & 40+ members. Organized study sessions for game strategy and card counting combinatorial topics.

- Organized weekly meetings for club members to discuss game strategy and learn new card games.

## **Community Service**

### **Math Corps Summer Camp at Rutgers University, Teaching Assistant** July 2024 – August 2024

- Tutored middle school campers from minority and low-income families in math, collaborated with Rutgers professor and college students.
- Prepared curriculum materials for 60+ middle school students, organized camp activities, led group discussions and review sessions.

### **Princeton Middle School Math Club, Tutor and Instructor** Sept. 2023 – Sept. 2025

- Instructed middle school math team (30+ ppl) for math competition topics.
- Organized the team to participate AMC8, AMC10, Math-count competitions

### **Ridgeview Forest Preservation, Volunteer** Sept. 2024 - Present

- Assist in removing invasive plants and pollutants to preserve native flora and water bodies
- Attended weekly training session on identifying new invasive species before entering forest.
- Attended discussion panels on new observations at the end of each session at different sites, including the Ridgeview forest and the John Witherspoon woods.

### **Princeton High School Annual Asia Festival, Interpreter & Volunteer** March 2024, 2025

- Provided event translations for 100+ non-English-speaking families
- Organized the annual events, set up Asian style food court, performed in Asian music and dance, helped set up lantern riddle guessing activities.

### **IEEE Integrated STEM Education Conference, Conference Volunteer** March 2024

- Assisted with attendee registration, managed conference logistics, gave directions to attendees, handled meeting room devices.
- Listened to speeches, organized Q&A sessions for poster presenters, coordinated event schedules for a professional conference.

## **Arts**

### **Princeton High School 2025 – 2026 Fall Play Cast Member** Sept. 2025 - Present

- Cast in the school's fall comedic play through a competitive two-round audition process.
- Performed a major role in a consecutive four-day run of theater stage play with 1000+ audience .
- PHS Fall play “Clue: the Stage” that I performed in won outstanding performance from the Foxy 2025-2026 Theatre Night Awards Nominations for High School Plays.

### **Piano Performer** Sept. 2021 - Present

- Performed with PHS Orchestra, at local churches, and for public events. Performed in Princeton High School annual concert.
- Earned Trinity College London Piano Level 8 Certificate & performed in various recitals and events.
- 2025 the 8th US Starlight Youth Talent Competition Piano Bronze Award
- 2026 2nd Prize in the 7th Apex International Music Competition, invited to perform at Merkin Concert Hall in New York City

## **Sports**

### **Princeton High School Badminton Team Captain** Sept. 2023 - Present

- Coordinated with school admins and club supervisor to host weekly meetings for over 30 participants.
- Organized the first ever Badminton Tournament in Princeton High School history with 40+ players.
- Led PHS team to participate New Jersey High School Badminton Tournament & local competitions.

### **Princeton High School Varsity Fencing**

Sept. 2022 - Present

- Trained 8 hours/week for 15 weeks/year on campus. Played seasonal competition sessions with other New Jersey high school teams representing PHS foil fencing varsity team.
- Participated 2023 and 2024 NJSIAA (New Jersey State Interscholastic Athletic Association) fencing tournament, won District 2<sup>nd</sup> place team award.
- Participated Princeton University fencing summer camp. Practiced foil fencing 8 hours a day. Refined competitive skills under the guidance of Princeton University Fencing Coach and played competition with campers from all over the world.

### **Awards & Honors**

- Team Top #1, Individual Geometry #13 in **Princeton University Mathematics Competition (PUMAC) 2025**
- Individual Finalist, Individual Geometry #13, Number Theory #8 in **Princeton University Mathematics Competition (PUMAC) 2024**
- Individual Top 10% Distinguished Honorable Mention, Team Guts Round Top 10% Distinguished Honorable Mention in **Stanford Math Tournament (SMT) 2025**
- Team National #6, Team High Medal in **American Regional Math League (ARML) 2024**
- Team round #25, Guts round #36 in **2025 Harvard-MIT Math Tournament (HMMT), MIT 2025**
- Honor Roll Top 5%, score 130.5/150 in **American Mathematics Competition 12 (AMC 12) 2024**
- Top 1%, score 138/150 in **American Mathematics Competition 10 (AMC 10) 2023**
- Qualified for **American Invitational Mathematics Exam (AIME) 2 times. 2024, 2025**