

SIYU PENG

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Objective: Third-year Mathematics major at MIT with a strong interest in algebraic geometry, cryptography, cybersecurity research, and math education. Intending to pursue graduate studies in pure mathematics.

EDUCATION

Massachusetts Institute of Technology

Bachelor of Science in Mathematics and Computer Science

Expected May 2027

GPA: 4.9/5.0

Relevant Coursework: Algebraic Geometry, Seminar in Arithmetic Dynamics, Design and Analysis of Algorithms, Introduction to Machine Learning, Commutative Algebra (Graduate), Complex Analysis, Cybersecurity Clinic, Differential Equations, Topology, Introduction to Programming (Python Software Development), Algebra, Real Analysis

EXPERIENCES

University of South Florida REU in Applied Algebra

Researcher

May 2025 - Present

Tampa, Florida

- Conducted collaborative research in a group of two under the mentorship of Dr. Xiang-dong Hou on the classification of degree-3 rational functions over finite fields under PGL-equivalence, extending existing results (previously known only for even q) to all finite fields, obtaining a full classification of equivalence classes.
- Applied tools from number theory and arithmetic geometry, with key arguments involving cross ratios of ramification points.
- Utilized SageMath and Mathematica to develop computational experiments, detect structural patterns, and verify conjectures.
- Currently writing preprint for journal submission.

Private Tutoring

Tutor

Jan 2023 - Present

Remote

- Provided individualized instruction in middle and high school mathematics and sciences, ranging from remedial support to competitive problem solving and extracurricular mathematics such as number theory.
- Guided one student self-learning AP Calculus AB and supported them to achieve a score of 4 on the AP exam.

MIT Open Learning

Learning Technologist

Cambridge, Massachusetts

May 2025 - Aug 2025

- Applied principles of learning science to redesign a course's Canvas site with the goal of improving student engagement and streamlining instructor workflows.
- Implemented MITx, Dropbox, and Qwickly integrations into Canvas
- Produced comprehensive documentation, including a high-level course guide, technical manual, and design choice tracker outlining rationale for all changes.

MIT Department of Mathematics

Grader - Topology

Sep 2024 - Dec 2024

Cambridge, Massachusetts

- Utilized Gradescope to manage submissions, carefully review and grade student proofs, and provide feedback to students

Program in Mathematics for Young Scientists

Head Counselor

Boston, Massachusetts

Jun 2024 - Aug 2024

- Led and coordinated a team of 20 counselors, delegating responsibilities through weekly meetings and committees to design academic programming and community events for 80 high school students.
- Delivered hour-long expository talks with comprehensive lecture notes on advanced topics (cryptography, elliptic curves, projective geometry), distilling complex material into accessible explanations.
- Provided both academic and personal mentorship, meeting daily with students to discuss number theory and Galois theory problem sets and encouraging resilience when facing challenging mathematics.

Mathnasium

Instructor

Highland, Utah

Feb 2023 - May 2023

- Taught individualized lessons to K-12 students, adapting instruction to diverse learning needs and grade levels.
- Collaborated with other instructors to track student progress and adjust learning plans to ensure measurable improvement.

Schoolhouse World

Tutor

Remote

Jun 2021 - May 2023

- Provided personalized math instruction to K-12 learners worldwide via Zoom, covering topics from Algebra 1 through Calculus.
- Designed and implemented lesson plans for SAT math bootcamps, instructing groups of up to 10 students and adapting material to target student weaknesses.
- Reviewed fellow tutors' sessions, offering constructive feedback to improve instructional techniques and enhance student engagement.