

Shiyue Li

Curriculum Vitae

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Education

- 2017- **Ph.D. student in Mathematics**, *Yale University*.
2013–2017 **Bachelor of Science**, *Harvey Mudd College*.
Graduated with Distinction and Honors in Mathematics
2010–2013 **High School**, *High School Affiliated to Nanjing Normal Univeristy*.

Experience

- Summer 2018 **Mentor**, Canada/USA Mathcamp.
◦ Taught four week-long classes on algebraic number theory, modular forms, group actions on trees and rational points on elliptic curves for talented high school students
◦ Engaged in various activity planning.
- 2016–2017 **Senior Thesis**, Harvey Mudd College.
Tropical Derivation of Cohomology Ring for Heavey/light Hassett Spaces
Advisor: Dagan Karp (Harvey Mudd College), Dhruv Ranganathan (MIT)
- 2016 , Google Research and Machine Intelligence.
Advisor: Caroline Pantofaru, Malcolm Slaney
◦ Research on Machine Learning algorithms with TensorFlow to solve an audio/video syncing problem involving computer vision and human saliency event detection.
◦ Implemented data processing pipelines in C++, Python and TensorFlow models that run on large-scale audio/video data.
- 2016 **Graph Theory Research Project**, Pomona College.
Advisor: Stephan Garcia (Pomona College)
Research methods to differentiate cospectral and non-isomorphic graphs with matrix analysis.

2015–2016 **Matrix Analysis Research Projects**, Pomona College.

Advisor: Stephan Garcia

- o Research on characteristics of similarity and unitary similarity classes of partial isometry matrices.
- o Research on the interlacing and perturbation of singular values and eigenvalues of complex symmetric matrices with min-max principles, Autonne-Tagaki factorization and famous Courant-Fischer formula.

2014 **HHMI Summer Research**, Pomona College.

Advisor: Blerta Shtylla (Pomona College)

Mathematical Modeling on DNA Segregation. Implemented Gillespie algorithms and Next Sub-volume Method to simulate diffusion and reactions of ParA and ParB proteins.

2012 **Summer Science Program**, Socorro, NM.

Research on orbit determination of solar-system body. Implemented programs in Python using iterative Gaussian method to determine the orbit elements based on the observation data of Asteroid 1998QS52 in Etsorn Observatory over six weeks. Paper archived in Harvard-Smithsonian Center for Astrophysics.

Talks

Fall 2018 **Schubert Calculus and Young Tableaux**, *Yale Graduate Student Seminar*.

Fall 2017 **Meet the Matroids**, *Yale Graduate Student Seminar*.

Teaching

Yale University

Fall 2018 Math 225 Linear Algebra and Matrix Theory TA

Spring 2018 Math 112 Calculus TA

Canada/USA Mathcamp

Summer 2018 Taught five week-long classes on algebraic number theory, modular forms, rational points on elliptic curves, geometric group theory and tropical plane curves.

Harvey Mudd College

2017 Math 147 Topology TA

2016 Math 132 Analysis II TA

2015 Math 171 Abstract Algebra TA

2015 Physics 51 Electricity Theory and Optics TA

2014 Physics 23 Special Relativity, Physics 24 Mechanics Grader

2014 Math 30 Calculus, Math 35 Statistics and Probability Grader

■ Awards and Honors

- 2017-2018 Kenneth and Mary Wang Graduate Fellowship for study at Yale
- 2017 Lang Fellowship at Yale Mathematics
- 2016 SIAM Outstanding Student Chapter Leadership – for serving the Harvey Mudd Math Club as a student chapter of Society for Industrial and Applied Mathematics
- 2013-2017 Harvey Mudd Merit Student Scholarship
- 2013-2017 Harvey Mudd International Student Scholarship – given to one international student per class for academic excellence
- 2013-2017 Dean's List (all semesters)
- 2013 Chinese National Linguistics Olympiad, Personal 3rd Place
- 2013 Chinese National Linguistics Olympiad, Team 2nd Place

■ Service

- Spring 2019 **Co-Organizer**, *Directed Reading Program at Brown*.
Organized Directed Reading Program for Brown undergrads with math-related majors
- 2018 - 2019 **Senator**, *Yale Graduate and Professional Student Senate*.
Department of Mathematics representative
- Fall 2018 **Organizer**, *Directed Reading Program at Yale Math*.
Organized Directed Reading Program for Yale College undergrads with math-related majors
- 2016 - 2017 **Event Planning Officer**, *Harvey Mudd College Math Club*.
Assist the president in event planning for math community at Mudd.
- 2015 - 2016 **President**, *Harvey Mudd College Math Club*.
Organize and assist talks, math teas, field trips to industry and events for math community at Mudd.
- 2015 - 2016 **Co-organizer**, *Caltech Harvey Mudd Math Competition*.
Organize problem writing, grading together with the Caltech representatives.

■ Computer Skills

Proficient	C++, Python, \LaTeX, TensorFlow, XML	LoC: 5000+
Intermediate	Java, Mathematica, Matlab, HTML, Linux	LoC:1000+

■ Study Abroad

- 2015 **Vienna**, *IES Vienna Music History and Performance Program*.
Studies in piano, chamber music, music theory and history in early 20th century, and German.

2015 **Paris**, *CIEE French Language and Culture Program.*
Studies in French language.

Languages

Chinese Mandarin

Mother tongue

English

Proficient

French

Intermediate

Hobbies

Piano

*Instructors: Gayle Blankenburg (LA), Carol Morgan (Vienna),
Fantee Jones (Yale), Maxwell Foster (Yale)*

Classical Guitar

*Pomona College Guitar Quartet;
Instructor: Lei Zhang (China), Jack Sanders (LA)*

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Achieved 3 dan at age of 9

Puzzles

*Google Games 2016 Los Angeles, 7th Place
Facebook Puzzlehunt 2017 at Harvey Mudd, 3rd Place
Microsoft, Puzzle Challenge 2017, Los Angeles 2nd Place, 25th
country-wise*