

# Shihan Kanungo

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## EDUCATION

**Henry M Gunn High School** GPA 3.96/4.46W | **San José State University (SJSU)** GPA 4.0 ..... 2022–2026

## SELECTED HONORS

- 17th Romanian Master in Mathematics. US team member ('26)
- USAMO (USA Math Olympiad) ('22 '25); Gold award ('25)
- MAA's Math Olympiad Program, 'Blue' MOP ('25)
- USAPhO (USA Physics Olympiad) Gold Medal & US Physics Team ('24)
- USAMTS (USA Math Talent Search) Gold medal ('23, '25)
- 85th Annual Putnam Competition. Honorable mention ('24)
- S.-T. Yau Science Award. USA Bronze medal in Mathematics ('24)
- Spirit of Ramanujan \$2k Fellowship ('23)
- WSS, World Science Scholar ('24)
- 2025 Global Child Prodigy Award. Recipient ('25)

## RESEARCH HIGHLIGHTS

### MIT PRIMES-USA (Combinatorics, Representation Theory, Commutative Algebra)

- Upper Bounds for Sequence Saturation [ [arXiv](#) ] Submitted to *Discrete Math.* (2025)
- Twisted Yangians in Complex Rank (with A.S. Kannan) [ [arXiv](#) ] Submitted to *Algebr. Represent. Th* (2025)
- Mixed Tensor Products ... and Newton's Formula for  $\mathfrak{gl}(m|n)$  (with S. Erat, A.S. Kannan) [ [arXiv](#) ] *Transform. Groups*. (2025)
- The Length Finite Factorization Property. (with H. Jiang, H. Kim) [ [arXiv](#) ] *Commun. Korean Math. Soc.* **39** (2024), no. 2, 313–329. (2024)

### San José State University (SJSU) (Number Theory)

- On Product Formulas of Guillera and Sondow (with J. Schettler) [ [arXiv](#) ] Submitted to *The Ramanujan Journal* (2024)

## ADVANCED COURSEWORK

### San José State University (Graduate courses shown in color)

A	MATH 221A Higher Algebra I	Edgar Bering	.....	'25 F
A+	MATH 226 Theory of Numbers	Jordan Schettler	.....	'24 Sp
A+	MATH 285M Elliptic Curves & Modular Forms	J Schettler	.....	'25 F
A+	MATH 229 Advanced Matrix Theory	Wasin So	.....	'24 F
A+	MATH 285M Nonnegative Matrices	Wasin So	.....	'25 Sp
A+	MATH 275A Topology	Yan Zhang	.....	'25 F
A+	MATH 279A Graph Theory	Yan Zhang	.....	'24 F
A+	MATH 231A Real Analysis	Slobodan Simic	.....	'24 F
A+	MATH 231B Functional Analysis	Slobodan Simic	.....	'25 Sp
A+	MATH 233A Applied Mathematics I	Daniel Brinkmann	.....	'25 Sp
A+	MATH 234 Advanced Dynamical Systems	Liam Stanton	.....	'24 Sp
A	MATH 285A Stochastic Methods	Liam Stanton	.....	'25 Sp
A	MATH 39 Linear Algebra I	Dashiell Fryer	.....	'23 F
A+	MATH 129B Linear Algebra II	Wasin So	.....	'24 Sp
A+	MATH 131A Introduction to Analysis	Tim Hsu	.....	'24 Sp
A+	MATH 131B Introduction to Real Variables	Tim Hsu	.....	'24 F
A+	MATH 138 Complex Variables	Liam Stanton	.....	'23 F
A+	MATH 179 Introduction to Graph Theory	Sogol Jahanbekam	..	'24 F

### Euler Circle (Grades not assigned)

Combinatorial Game Theory	.....	2024–'25
Analytic Number Theory, Ergodic Theory, Number Theory	..	2023–'24
Differential Geometry, Generating Functions	.....	2021–'22
Markov Chains, Abstract Algebra, Real Analysis	.....	2020–'21

### Art of Problem Solving (AoPS)

Group Theory (A+), Calculus (A+)	.....	2020–23
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**Technical Skills:** Python, Java, MATLAB,  $\LaTeX$ , Asymptote.

## EXPOSITORY PAPERS

- *David Gale's Subset Takeaway Game*, Combinatorial Game Theory ('24)
- *Space-Filling Curves*, Real Analysis ('24)
- *The Hahn-Banach Theorem and Applications*, Functional Analysis ('25)
- *Sobolev Spaces and Applications to PDEs*, Theory of PDEs ('25)
- *The Stochastic Gradient Descent Method*, Stochastic Methods ('25)
- *Chromatic Polynomials*, Graph Theory ('24)
- *Lagrangian and Hamiltonian Mechanics*, Dynamical Systems ('24).
- *Large Gaps Between Primes*, Analytic Number Theory ('24)
- *Dynamical Billiards*, Ergodic Theory ('24)
- *Arithmetic Dynamics*, Number Theory ('23)
- *Minimal surfaces*, Differential Geometry ('22)
- *Herbert Wilf's snake-oil method*, Generating Functions ('21)
- *Mixing-time estimates for riffle shuffle*, Markov chains ('20)
- *Classifying groups of certain orders*, Algebra ('20)

## CAMPS & PROGRAMS

- MOP (Math Olympiad Program), IMSA, Aurora IL. (Jun '25)
- USAPhO Team Training Camp, Univ. of Maryland. (Jun '24)
- The Special Lectures. Kharkiv-Vienna Intl. Sc. School. (Aug '23)

## MUSIC

- Stanford Jazz Workshop (2024)  
Duke Ellington award; Outstanding Musicianship award
- Northern California Young Talents Competition (2023)  
First place, solo violin classical performance
- Golden State Youth Orchestra (GSYO)
  - Assistant concertmaster. Camilla Kolchinsky Orchestra (2023)
  - Concertmaster. Camerata & Chamber Players Orch. ('20–'22)

**Languages:** English (native) & French (beginner).