

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

- 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)
- AIME, 7-time qualifier. 13/15 ('25); 11/15 ('22, '24)
- 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 *Amer. Math. Monthly* (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

Technical Skills: Python, Java, MATLAB, L^AT_EX, 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. ([2022](#))

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