Shihan Kanungo

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EDUCATION

Henry M Gunn High School GPA 3.96/4.46W | **San Josè 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)
- 85th Annual Putnam Competition. Honorable mention ('24)
- S.-T. Yau Science Award. USA Bronze medal in Mathematics ('24)

- USAMTS (USA Math Talent Search) Gold medal ('23, '25)
- Spirit of Ramanujan $2k Fellowship ('23)
- WSS, World Science Scholar ('24)
- 2025 Global Child Prodigy Award. Recipient ('25)
- AIME, 6-time qualifier. 13/15 ('25); 11/15 ('22,'24)

RESEARCH HIGHLIGHTS

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

- ○ Twisted Yangians in Complex Rank (with A.S. Kannan) [arXiv] Submitted to *Journal of Algebra* (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)

–	MATH 221A *Higher Algebra I* Edgar Bering	....	*'25 F*
A+	MATH 226 Theory of Numbers Jordan Schettler	....	*'24 Sp*
–	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*
–	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*

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)

Technical Skills: Python, Java, MATLAB, LaTeX, Asymptote.

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