Shihan Kanungo

shihankanungo@gmail.com | US citizen | san francisco & bay area

EDUCATION

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

MATHEMATICS RESEARCH (PUBLICATIONS/PREPRINTS)

MIT PRIMES-USA (Representation Theory, 2024; Commutative Algebra, 2023) . . . . *Cambridge, MA · 2023–25*

- Mixed Tensor Products, Capelli Berezinians, and Newton's Formula for $\mathfrak{gl}(m|n)$ (with S. Erat, A. Kannan) [arXiv] (2024) Transform. Groups., Submitted. Won USA Bronze medal in Mathematics at S.-T. Yau HS Science Award. Presented at JMM25 PME Contributed Session for Research by Undergraduates. Reference: Dr. Arun Kannan (MIT)
- A weaker notion of the finite factorization property. (with H. Jiang, H. Kim) [arXiv] (2023) Commun. Korean Math. Soc. **39** (2024), no. 2, 313-329. Presented at JMM24 AMS-PME, MAA MathFest. Reference: Dr. Felix Gotti (MIT)

San José State University (SJSU) (Number Theory, 2024) . . . . *San José, CA · 2024*

- On Product Formulas of Guillera and Sondow (with J. Schettler) [arXiv] (2024) American Mathematical Monthly. Submitted. Reference: Dr. J. Schettler (SJSU)

EXPOSITORY PAPERS

- *David Gale's Subset Takeaway Game,* Combinatorial Game Theory ('24)
- *Space-Filling Curves,* Real Analysis ('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)

HONORS & AWARDS

- S.-T. Yau High School Science Award.
  USA Bronze medalist in Mathematics (2024)
- USAPhO Gold Medal (US Physics Team) (2024)
- WSS, World Science Scholar (2024)
- Spirit of Ramanujan $2k Fellowship (2023)
- USAMTS Gold Medal (2023)
- USAMO (USA Math Olympiad) (2022)
- Math Kangaroo (*Level 12*) USA rank 4 (2022)

CAMPS & PROGRAMS

- USAPhO Team Training Camp, Univ. of Maryland. (Jun 2024)
- JMM25 PME Contributed Session. Presenter (Jan 2025)
- MAA MathFest '24 *Research in Motion.* Presenter (Aug 2024)
- JMM24 AMS–PME Poster Session. Presenter (Jan 2024)
- SWIM 2023, Summer Workshop for Intrepid Mathematicians, MIT. Presenter. (Aug 2023)
- The Special Lectures. Kharkiv-Vienna International Science School. Invitee. (Aug 2023)

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

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

MATH COURSES

San José State University (Graduate courses in color)

A+	MATH 231A *Real Analysis* Slobodan Simic	. . . .	'24 F
—	MATH 231B *Functional Analysis* Slobodan Simic	. . . .	'25 Sp
—	MATH 233A *Applied Mathematics I* Daniel Brinkmann	. . . .	'25 Sp
A+	MATH 234 Advanced Dynamical Systems Liam Stanton	. . . . .	'24 Sp
—	MATH 285A *Stochastic Methods* Liam Stanton	. . . .	'25 Sp
A+	MATH 229 *Advanced Matrix Theory* Wasin So	. . . .	'24 F
—	MATH 285M *Nonnegative Matrices* Wasin So	. . . .	'25 Sp
A+	MATH 279A *Graph Theory* Yan Zhang	. . . .	'24 F
A+	MATH 226 Theory of Numbers Jordan Schettler	. . . .	'24 Sp
A	MATH 39 Linear Algebra I Dashiell Fryer	. . . .	'23 F
A+	MATH 129B Linear Algebra II Wasin So	. . . .	'24 Sp
—	MATH 128B *Abstract Algebra II* Edgar Bering	. . . .	'25 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*

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)