Evan Chen

✉ evan@evanchen.cc　•　🌐 web.evanchen.cc　•　⚡ vEnhance

in vEnhance　•　US Citizen

*"It's hard to do a really good job on anything you don't think
about in the shower." — Paul Graham*

Education

PhD in number theory (math), 2025: Massachusetts Institute of Technology

○ Advisor: Wei Zhang. Thesis: Explicit formulas for weighted orbital integrals for the inhomogeneous and semi-Lie arithmetic fundamental lemmas conjectured for the full spherical Hecke algebra.

○ Full list of major coursework at https://web.evanchen.cc/upload/math-coursework.pdf

Past affiliations

Massachusetts Institute of Technology: B.S. Math (transfer)	*2015 – 2018*
Harvard College: Undergraduate (and took math 55)	*2014 – 2015*
UC Berkeley: Concurrent enrollment during high school	*2012 – 2013*
San José State University: Concurrent enrollment during high school	*2012 – 2013*

Programming experience

Python, LaTeX, Arch Linux on i3. See https://github.com/vEnhance.

Selected teaching and mentoring

Benevolent dictator: Olympiad Training for Individual Study (OTIS)　　　*2015 – present*

Organizer of training program for students who are preparing for USAMO/IMO type exams. Over 600 students per year from across the world. Details available at https://web.evanchen.cc/otis.html.

Assistant academic director: Math Olympiad Summer Program (MOP)　　　*2016 – present*

Training program for the USA team at the International Math Olympiad (IMO). Gave lectures, coordinate grading, manage assistant teams, direct logistics, exam design. Reference: Po-Shen Loh.

Editor-in-Chief: USA Math Olympiad (USAMO)　　　*2019 – 2022*

Also grader (2015-), problem author (2016-), committee member (2018-2019). Reference: Bela Bajnok.

Team selection coordinator: USA coach for International Math Olympiad　　　*2017 – 2024*

Together with Ankan Bhattacharya, Andrew Gu, Gopal Goel, Luke Robitaille, managing the design and grading of United States team selection exams for International Math Olympiad, etc. Reference: Po-Shen Loh.

Selected fellowships and awards

Morgan prize honorable mention: awarded January 2019

NSF graduate fellowship: awarded April 2018

MIT Akamai presidential graduate fellow: awarded March 2018

International Math Olympiad (IMO): Gold medal, awarded 2014, rank 12th

USA Math Olympiad (USAMO): National winner, awarded 2014, rank 2nd

Selected publications and preprints

- A family of partially ordered sets with small balance constant.
  Evan Chen. In: Electr. J. Comb., 25:4 (2018), P4.43. DOI: `https://doi.org/10.37236/7337`. arXiv:1709.05753.

- Avoiding algebraic integers of bounded house in orbits of rational functions over cyclotomic closures.
  Evan Chen. In: Proc. Amer. Math. Soc., 146: (2018), pp. 4189–4198. DOI: `https://doi.org/10.1090/proc/14115`. arXiv:1608.04146.

- Elliptic curve variants of least quadratic nonresidue and Linnik's theorem.
  Evan Chen, Peter S. Park, and Ashvin A. Swaminathan. In: Int. J. Number Theory, 14:1 (2018), pp. 255–288. ISSN: 1793-0421. DOI: `https://doi.org/10.1142/S1793042118500161`. arXiv:1507.07122.

- Linear polychromatic colorings of hypercube faces.
  Evan Chen. In: Electr. J. Comb., 25:1 (2018), P1.2. DOI: `https://doi.org/10.37236/6455`. arXiv:1609.01247.

- Linnik's theorem for Sato-Tate laws on CM elliptic curves.
  Evan Chen, Peter S. Park, and Ashvin A. Swaminathan. In: Research in Number Theory, 1:1, 28 (2015). DOI: `https://doi.org/10.1007/s40993-015-0028-0`. arXiv:1506.09170.

- Multiplicative and exponential orthomorphisms.
  Evan Chen. In: Journal of Combinatorics, 11:2 (Jan. 2020), pp. 377–389. DOI: `https://doi.org/10.4310/JOC.2020.v11.n2.a8`. arXiv:1710.02734.

- On logarithmically Benford sequences.
  Evan Chen, Peter S. Park, and Ashvin A. Swaminathan. In: Proc. Amer. Math. Soc., 144:11 (2016), pp. 4599–4608. ISSN: 0002-9939. DOI: `https://doi.org/10.1090/proc/13112`. arXiv:1507.02629.

- Schur-concavity for avoidance of increasing subsequences in block-ascending permutations.
  Evan Chen. In: Electr. J. Comb., 24:4 (2017), P4.4. DOI: `https://doi.org/10.37236/7250`. arXiv:1708.01350.

- Semi-Lie arithmetic fundamental lemma for the full spherical Hecke algebra.
  Submitted for publication. arXiv:2502.06078.

- The 26 Wilf-equivalence classes of length five quasi-consecutive patterns.
  Evan Chen and Shyam Narayanan. In: Discrete Mathematics & Theoretical Computer Science, vol. 20 no. 2: (Oct. 2018). DOI: `https://doi.org/10.23638/DMTCS-20-2-12`. arXiv:1609.04626.

- Euclidean Geometry in Mathematical Olympiads (978-0-88385-839-4)
  Now also translated into Chinese (978-7-5603-9588-3) and Japanese (978-4-535-78978-4).
  Evan Chen. MAA Problem Books Series. Mathematical Association of America, Washington, DC, 2016, pp. xv+311. ISBN: 978-1-4704-6620-6. 300 pp, 248 figures. See `https://web.evanchen.cc/geombook.html`.

Research internships

Duluth REU: Research Experience for Undergraduates *Summer 2016, 2017*
Worked on projects in number theory and combinatorics. Directed by Joe Gallian.

Emory REU: Research Experience for Undergraduates *Summer 2015*
Worked on projects in analytic number theory on the distribution of primes. Directed by Ken Ono.

RSI participant: CEE Research Science Institute *Summer 2013*
Worked on high-school project on Bott-Samelson bimodules. Directed by Center for Excellence in Education.

Selected work experience

Volunteer and outreach

USA Observer A: International Math Olympiad (IMO) — *2017 – 2019*
Part of the USA delegation to the International Math Olympiad. Advised on problem voting, helped organize trip for students, and helped defend the papers of the USA team.

Officer: Harvard-MIT Math Tournament (HMMT) — *2014 – 2020*
Served as problem czar (2014-2016), software director (2016-2017), historian (2017-2018), chief of staff (2018-2019), chief advisor (2019-2020). See https://github.com/vEnhance/helium for a software example.

Problem writing team: American Regional Math League (ARML) — *2016 – present*
Problem author team for the American Regional Math League (ARML), an annual high-school math meet.

More teaching

Mentor and exam designer: MIT PRIMES — *2016 – 2021*
Was mentor (2016-2017), entrance exam designer (2016 - present). Mentored for high-school/college collaborative research project (PRIMES / AoPS CrowdMath); design project, oversee and guide discussion. Reference: Tanya Khovanova.

Assistant and curriculum designer: Art of Problem Solving — *2014 – 2020*
Designed curriculum and materials, and worked as teaching assistant, primarily for Worldwide Online Olympiad Training class (WOOT). Reference: Richard Rusczyk.

Counselor: Summer Program for Applied Rationality&Cognition — *2015 – 2019*
Was junior counselor (2015, 2017, 2018), admissions staff (2017, 2018, 2019). Reference: Yan Zhang.

Software

Software developer: Expii Inc. — *2013 – 2015*
Developer for expii.com, an online education platform. Main task was the development and maintenance of the website's markup language, both specifications and implementation. Reference: Po-Shen Loh