Evan Chen

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

Education

Massachusetts Institute of Technology   **Sept. 2018 – Feb. 2025 (expected)**
PhD candidate in number theory (automorphic forms)   *Advisor: Wei Zhang*

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

Undergraduate

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 300 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 – present*
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, European Girls' Math Olympiad, and Romanian Masters in Math. 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.

○ 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. Synopsis at `https://web.evanchen.cc/geombook.html`.

○ 45th United States of America Mathematical Olympiad.
Evan Chen and Doug Ensley. In: Math. Mag., 89:4 (2016), pp. 303–311. ISSN: 0025-570X. DOI: `http://dx.doi.org/10.4169/math.mag.89.4.303`.

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