Evan Chen

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in evanchenmath • US Citizen

"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 **Fall 2018 – present**
PhD candidate in mathematics.

(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 (and Django), LaTeX, Linux (Arch Linux on i3).

Selected teaching and mentoring

Assistant academic director: Math Olympiad Summer Program (MOP) *2018 – present*
Also **head grader (2016-2017)**. 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.

Co-Editor-in-Chief: USA Math Olympiad (USAMO) *Starting July 2019*
Also **grader (2015-), problem author (2016-), committee member (2018-2019)**. Co-EiC with *Jenny Iglesias* starting July 2019. Reference: Bela Bajnok.

Director: Olympiad Training for Individual Study (OTIS) *2015 – present*
Director of private individualized classes for students who are preparing for USAMO/IMO type exams. Details available at https://web.evanchen.cc/otis.html.

Team selection coordinator: USA Olympiad Team Selection Tests *2017 – present*
Together with *Ankan Bhattacharya*, coordinating both the design and grading of team selection tests for International Math Olympiad, European Girls' Math Olympiad, and Romanian Masters in Mathematics. 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
William Lowell Putnam Competition: N1, 2015, rank 13th

Publications and preprints

- A family of partially ordered sets with small balance constant.
  E. Chen, *Electr. J. Comb.*, 2018, **25**, P4.43.. arXiv:1709.05753.

- Avoiding algebraic integers of bounded house in orbits of rational functions over cyclotomic closures.
  E. Chen, *Proc. Amer. Math. Soc.*, 2018, **146**, 4189–4198. arXiv:1608.04146.

- Elliptic curve variants of least quadratic nonresidue and Linnik's theorem.
  E. Chen, P. S. Park and A. A. Swaminathan, *Int. J. Number Theory*, 2018, **14**, 255–288. arXiv:1507.07122.

- Linear polychromatic colorings of hypercube faces.
  E. Chen, *Electr. J. Comb.*, 2018, **25**, P1.2. arXiv:1609.01247.

- Linnik's theorem for Sato-Tate laws on CM elliptic curves.
  E. Chen, P. S. Park and A. A. Swaminathan, *Research in Number Theory*, 2015, **1**, DOI: 10.1007/s40993-015-0028-0. arXiv:1506.09170.

- Multiplicative and exponential orthomorphisms.
  E. Chen, *Journal of Combinatorics*, 2020, **11**, 377–389. arXiv:1710.02734.

- On logarithmically Benford sequences.
  E. Chen, P. S. Park and A. A. Swaminathan, *Proc. Amer. Math. Soc.*, 2016, **144**, 4599–4608. arXiv:1507.02629.

- Schur-concavity for avoidance of increasing subsequences in block-ascending permutations.
  E. Chen, *Electr. J. Comb.*, 2017, **24**, P4.4. arXiv:1708.01350.

- The 26 Wilf-equivalence classes of length five quasi-consecutive patterns.
  E. Chen and S. Narayanan, *Discrete Mathematics & Theoretical Computer Science*, 2018, **vol. 20 no. 2**. arXiv:1609.04626.

- Euclidean Geometry in Mathematical Olympiads.
  E. Chen, *Euclidean geometry in mathematical olympiads*, Mathematical Association of America, Washington, DC, 2016, pp. xv+311. ISBN 978-0-88385-839-4.300 pp, 248 figures. Synopsis at https://web.evanchen.cc/geombook.html.

- 45th United States of America Mathematical Olympiad.
  E. Chen and D. Ensley, *Math. Mag.*, 2016, **89**, 303–311.

Selected work experience

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.

Volunteer and outreach

USA Observer A: International Math Olympiad (IMO)   *2017 – present*
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 – present*

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 – present*

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 – present*

Was **junior counselor (2015, 2017, 2018), admissions staff (2017, 2018).** 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