Vita

PO-SHEN LOH

Spring 2026

Current positions

Carnegie Mellon University, Pittsburgh, Pennsylvania
Professor of Mathematics, 2020–present; Assoc. 2015–2020; Asst. 2010–2015

Expii, Inc. (producer of NOVID and LIVE), Pittsburgh, Pennsylvania
Founder and CEO, 2014–present

International Math Olympiad Foundation.
Vice President for Advancement, 2023–present

Previous positions

Mathematical Association of America, Washington, D.C.
National Coach, USA International Math Olympiad Team, 2013–2023
Assistant (2002, 2003); Instructor (2008, 2009); Deputy Leader (2004, 2010–2013)

Microsoft Research, Seattle, Washington
Research Intern, Summer 2009

The D.E. Shaw Group, New York, New York
Quantitative Analyst Intern, Summers 2005 and 2007

Education

Princeton University, Princeton, New Jersey
Ph.D., Mathematics, 2010

Cambridge University, Cambridge, United Kingdom
Master of Advanced Study in Mathematics with Distinction, 2005

California Institute of Technology, Pasadena, California
Bachelor of Science with Honor, Mathematics, 2004; GPA 4.3/4.3 (unique highest)

Awards, fellowships, and grants

United States Presidential Early Career Award for Scientists and Engineers (2019)
Coach, 4-time winning Int'l Math Olymp team ('15, '16, '18, '19); last USA win '94
Ryan Award for Meritorious Teaching (typically one per year), CMU (2019)
Nat'l Sci. Fndn. CAREER Grant DMS-1455125, Extremal Combinatorics ('15–'20)
E-Learning Bronze Award (Expii), 2016 QS Reimagine Education Awards
Finalist (Expii), 2016 SXSWedu Startup Competition
Pittsburgh 40 under 40, Pittsburgh Magazine (2017)
Expii grants: Overdeck Family Fndn. and Templeton World Charity Fndn. ('16, '18)
Nat'l Sci. Fndn. Grant DMS-1201380, Extremal Combinatorics (2012–2015)
Coach, CMU Putnam math team rank #2,5,2,5,2,1 (2011–2016); last top-5 in 1987
USA-Israel Binational Science Foundation Grant (2011–2015)
Nat'l Sci. Fndn. Infrastructure Grant for USA Math Olymp. Program ('10–'13)
Fannie and John Hertz Foundation Graduate Fellowship (2005–2010)
Nat'l Sci. Fndn. Graduate Research Fellowship (2006–2009)
Winston Churchill Foundation Scholarship (2004–2005) for study at Cambridge
16th and 18th places, 2002 and 2003 Putnam Mathematical Competitions
7th place team, 2004 Assoc. Comput. Machinery Int'l Colleg. Programming Contest
Silver medal, 1999 Int'l Math Olympiad / 3rd place, 1996 Nat'l MathCounts
Only 1999 Nat'l Olymp. training camp qualifier in 3 subj. (math, comput., chem.)

Patents

P. Loh, H. Cai, F. Campos, J. Choi, T. Chu, D. Dijour, B. Huffman, M. Jaffer, Z. Scully, B. Wang, L. Wang, P. Wang, Crowdsourced contact tracing, *U.S. Patent* #11950163, granted Apr. 2, 2024

P. Loh, L. Hamilton, R. Li, Adaptive learning system using automatically rated problems and pupils, *U.S. Patent* #10720072, granted Jul. 21, 2020

E. Lubetzky, Y. Peres, D. Malkhi, P. Loh, Distributed stochastic clustering for automated formation of connected networks of agents, *U.S. Patent* #9575809, granted Feb. 21, 2017

Structural innovations

NOVID pandemic radar app (2020–2021).
Led team which invented new incentive-aligned paradigm for smartphone-based pandemic control. Resulting app "NOVID" was also first anonymous contact tracing app published for the USA which did not use any personal information (no GPS, no mobile number, etc).

USA Math Olympiad training program (2010–2023).
Shifted primary focus away from near-term training for USA performance on (high school) International Math Olympiad competition itself, towards promotion of long-term success of identified talent through motivation and guidance. Secured new National Science Foundation grant to introduce connections to research and higher math. Globalized scope to invite top foreign students to join USA national training program. Expanded National Coach strategy to mathematically inspire wide base of students through public outreach. Even with focus shift from near-term training to long-term talent cultivation, USA math team ranked #2, #1, #1, #3, #1, and #1 in six years as National Coach, ending 20-year gap in first-place finishes.

Carnegie Mellon University (2010–present).
While coach, CMU math team had six consecutive top-5 rankings in Putnam competition, breaking 20-year gap in top-5 finishes and setting university records (#2 followed by #1). Every year from 2012 onward, CMU also had 2nd-most students individually ranked in top-500 among all universities, representing 6-fold increase over historical average. Achieved this by co-leading creation and management of undergraduate focused ultra-honors program, mentoring student talent, and matching students with advanced education and research opportunities.

Research focus

Advance theoretical understanding of combinatorics, probability, and algorithms, while practically implementing, commercializing, and scaling real-world applications

Selected publications (out of 40)

P. Loh, A. Bershteyn, and S. Yee, Lessons Learned in Piloting a Digital Personalized COVID-19 "Radar" on a University Campus, *Public Health Reports* **137** (2022), 76S–82S.

P. Loh and J. Ma, Diameter critical graphs, *Journal of Combinatorial Theory Series B* **117** (2016), 34–58

M. Lavrov and P. Loh, Hamiltonian increasing paths in random edge orderings, *Random Structures and Algorithms* **48** (2016), 588–611

J. Fox, P. Loh, and Y. Zhao, The critical window for the classical Ramsey-Turán problem, *Combinatorica* **35** (2015), 435–476

P. Loh and E. Lubetzky, Stochastic coalescence in logarithmic time, *Annals of Applied Probability* **23** (2013), 492–528

Selected research talks (out of 163)

Public Lecture at Simons Institute for Theory of Computing at Berkeley, *Building Human Intelligence at Scale, to Save the Next Generation from ChatGPT* (2023)

Duke University, Joint Colloquium for Math and Computer Science, *A New Approach for Fighting Infectious Disease, Combining Game Theory and Network Theory* (2021)

Society of Industrial and Applied Mathematics Annual Meeting, American Math Society Invited Presentation, *Connections in Extremal Combinatorics: Ramsey Theory* (2017)

Stanford Mathematics Department Colloquium, *Directed paths: from Ramsey to Ruzsa and Szemerédi* (2016)

National Institutes of Health Frontiers in Data Science Lecture Series (talk joint with National Science Foundation), *World-Scale Personalized Learning through Crowdsourcing and Algorithms* (2016)

Select media coverage

Lecture tour of unprecedented intensity was covered by *Wall Street Journal* wsj.com/articles/chatgpt-ai-math-po-shen-loh-1e9f80dc

New educational method combining actors, math stars, and live-streaming in *CNN* cnn.com/world/professor-po-shen-loh-actors-classrooms-spc

New paradigm for smartphone pandemic control was covered in deep-dive investigative articles in national media in Singapore and Australia
str.sg/3cMq abc.net.au/news/2022-01-26/omicron-spread-what-is-the-future-of-contact-tracing/100770948

Simpler way to solve Quadratic Equations was covered in *The New York Times*, *Popular Mechanics*, *MIT Technology Review*, others.
nyti.ms/3jbBlGv popularmechanics.com/science/math/a30152083

Promoted math through interviews with international press after USA team won International Math Olympiad in 2015 and 2016. Featured on *CBS Weekend News*, quoted in *Washington Post*, *NPR*, *The Atlantic*, *China Newsweek*, etc. Selected:
cbsnews.com/news/americas-best-young-math-minds-compete-in-rio
wpo.st/EMFZ2 wpo.st/ZJzZ2 n.pr/1TIURr3 53eig.ht/2bSSfbu
theatlantic.com/magazine/archive/2016/03/the-math-revolution/426855
lat.ms/1fE2OyO str.sg/Ze6V news.inewsweek.cn/detail-2135.html

Featured in or co-created YouTube videos totaling over 24 million views, including the 2nd most popular in Carnegie Mellon University channel. youtu.be/IUTGFQpKaPU

Selected general talks (out of 1379)

Estimated total yearly in-person audiences reached: 2025 (30,000 people through 224 talks), 2024 (30,000 people through 227 talks), 2023 (30,000 people through 228 talks), 2022 (15,000 people through 142 talks), 2021 (10,000 people through 104 talks), 2020 (4,000 people through 35 talks), 2019 (15,000 people through 99 talks), 2018 (15,000 people through 87 talks), 2017 (8,000 people through 66 talks), 2016 (4,000 people through 60 talks)

All School Meeting (Assembly), Phillips Andover Academy, *Math, Invention, and Life* (2023)

Commencement Keynote, Duquesne University School of Education, *The Future of Education* (2018)

National Museum of Mathematics (New York), Math Encounters Public Lecture, *Massive Numbers, from the International Mathematical Olympiad* (2015)

Commencement Keynote, Chinese International School (Hong Kong), *Mathematics and Impact* (2017)

SXSWedu Conference & Festival (Austin), Launch Startup Competition Finalist Pitch, *Personal Learning* (2016)

Advisory / committees

Fannie and John Hertz Foundation Co-Chair of Program Committee (2022–2025), and Fellowship Interviewer (2016–present)

Artificial Intelligence Math Olympiad Advisory Committee (2024–present)

New York Academy of Sciences Global STEM Alliance, STEM Education Framework Advisory Board (2016–2021)

Mathematical Association of America Second Century Campaign Steering Committee (2015–2016)