

Special Colloquium, MATHEMATICS AND STATISTICS
UNIVERSITY OF NEW MEXICO

*Using Math to Invent Solutions
to Large-Scale Human Problems
in Education and Healthcare*



*Professor Po-Shen Loh
Mathematics Department
Carnegie Mellon University*

Abstract. “Why are we learning this?” – the dreaded question often received by math professors. In this colloquium, the speaker will share his story of using his math-professor background to devise new solutions to two practical problems that affect our whole society: disease control and education. His original research specialty was combinatorics, and both graph theory and game theory feature as inspirations in his work. During the COVID lockdown, he invented an app which solves the incentive misalignment problem intrinsic in contact tracing: in the traditional approach, people are asked to isolate to protect others against infection, not to save themselves. He has also been working for a decade at the intersection of education and technology. His latest creation there is a new, massively-scalable ecosystem for teaching middle school students creative math problem solving, powered by a unique incentive alignment structure that involves professionally trained actors and comedians (<https://live.poshenloh.com>). He will also share about his journey which led to this discovery, which involved giving hundreds of talks in public parks all around the country.

Profile. Po-Shen Loh is a social entrepreneur and inventor, working across the spectrum of mathematics, education, and healthcare, all around the world. He is a math professor at Carnegie Mellon University, and served a decade-long term as the national coach of the USA International Mathematical Olympiad team from 2013-2023. He has pioneered innovations ranging from a scalable way to learn challenging math live online at comparable engagement to live-streaming entertainment, to a new way to control pandemics by leveraging self-interest.

As an academic, Po-Shen has earned distinctions ranging from an International Mathematical Olympiad silver medal to the United States Presidential Early Career Award for Scientists and Engineers. His scientific research considers a variety of questions that lie at the intersection of combinatorics (the study of discrete systems), probability theory, and computer science. As an educator, he was the coach of Carnegie Mellon University's math team when it achieved its first-ever #1 rank among all North American universities, and the coach of the USA Math Olympiad team when it achieved its first-ever back-to-back #1-rank victories in 2015 and 2016, and then again in 2018 and 2019. His research and educational outreach takes him to cities across the world, reaching over 10,000 people each year through public lectures and events, and he has featured in or co-created videos totaling over 20 million YouTube views.

Po-Shen received his undergraduate degree in mathematics from Caltech in 2004, graduating with the highest GPA in his class. He received a master's degree in mathematics from the University of Cambridge in 2005, where he was supported by a Winston Churchill Foundation Scholarship. He continued his studies at Princeton, supported by a Hertz Foundation Fellowship and a National Science Foundation Graduate Research Fellowship, where he completed his Ph.D. in mathematics at the end of 2009, and has been on the faculty at Carnegie Mellon University ever since.

16:00-17:00 Friday
7 February 2025
Auditorium, SMLC 102

All are welcome! Please attend
in-person or register for Zoom.
Zoom Registration



Register by QR-code!