

SEMINAR SERIES

World-Scale Personalized Learning Through Crowdsourcing and Algorithms

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Date and Time: Tuesday, 5 July 2016, 2:00pm-3:00pm

Venue: Room Y5-104, City University of Hong Kong

Reception starts at 1:45pm

(Language: **English**)

Abstract

Po-Shen Loh, national coach of our country's International Math Olympiad team and math professor at Carnegie Mellon University, is pioneering a project (expii.com) to turn every smartphone into a free personalized learning system, by combining crowdsourcing and mathematical algorithms. The key insight is that in a modern world where content is everywhere (but of varying quality, and disorganized), the central question is then to identify exactly which piece of content a particular learner should interact with at any given moment, based on the learner's current knowledge base and the learner's long-term goals. Leveraging the Elo rating system from competitive chess, ExpII introduces a new mathematical framework for answering this question, which reduces the general problem of Education into a graph algorithm problem, informed by data collected from the universe of users across the platform. This new mathematical formulation also unlocks a paradigm shift away from courses and grades, towards a new ecosystem of atomic concepts and population-wide statistical comparisons.

The platform itself is inspired by modern Internet products: it combines elements of Wikipedia and Quora, with content creation made as easy as Tumblr and Google Forms, organized like Khan Academy, but with the turn-by-turn navigational interface and browsability of Google Maps. It has the potential to organize and widely disseminate the largest body of openly-licensed educational resources ever created, into the hands of billions of people worldwide through their smartphones, tablets, and computers.

About the Speaker

Po-Shen Loh is a math enthusiast and evangelist. He is the national coach of the USA International Mathematical Olympiad team, a math professor at Carnegie Mellon University, and the founder of expii.com, an education technology startup providing a free personalized learning platform on every smartphone.

As an academic, Po-Shen has numerous distinctions, from an International Mathematical Olympiad silver medal to the National Science Foundation's CAREER award. His 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 led Carnegie Mellon University's Putnam team to multiple 2nd-place finishes among all North American universities. His approach to coaching the national Math Olympiad team received significant press coverage after the USA's historic victory in 2015. Through ExpII, Po-Shen extends his activity to the global mainstream, combining algorithms and crowdsourcing to deliver a GPS-style navigational interface for the world of knowledge.

Po-Shen received his undergraduate degree in mathematics from Caltech in 2004, graduating first 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, 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.

Chair: Dr. Chee Wei Tan (algebrachallenge@gmail.com)