RENSSELAER POLYTECHNIC INSTITUTE

DEPARTMENT OF MATHEMATICAL SCIENCES COLLOQUIUM

Yuehaw Khoo (University of Chicago)

February 15, 2024 - 4pm

PITTS 4114

High-dimensional PDEs, tensor-network, and convex optimization

This talk presents new computational approaches for high-dimensional partial differential equations (PDEs), employing tensor networks and convex relaxations. Specifically, based on these approaches, we demonstrate the construction of inner and outer approximations to PDE solutions using low-order statistics. These in turn effectively address the curse of dimensionality.

Refreshments served at 3:30pm 4th floor Lounge – Amos Eaton

Biographical Sketch

Yuehaw Khoo is an assistant professor at the Department of Statistics at University of Chicago. He is also a member of Committee on Computational and Applied Mathematics (CCAM). He had Amit Singer at Princeton as his Ph.D. adviser during 2012-2016, Lexing Ying at Stanford as his post-doc mentor during 2016-2019, and Phuan Ong at Princeton supervising his master thesis in experimental physics during 2010-2012. Yuehaw Khoo works on developing computational and data-driven techniques for problems in biological and physical sciences. In particular, he develops methods for many-body physics, protein structure determination from NMR spectroscopy and Cryo-EM. He is interested in techniques based on (1) convex and non-convex optimization, (2) neural-network and tensor-network methods.
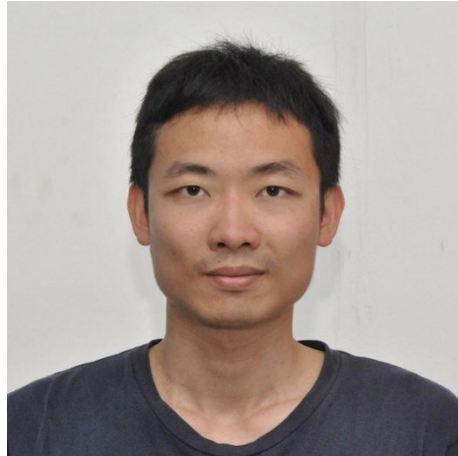
Yuehaw Khoo
Assistant Professor
Department of Statistics - University of Chicago
ykhoo@uchicago.edu