QuanTalks

IISc Quantum Technologies Initiative (IQTI)
Seminar Series

Title: ***Hybrid classical-quantum algorithms***

Speaker: ***Prof. Aram Harrow,*** Department of Physics, Massachusetts Institute of Technology, USA
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Date & Time
30th June 2021 | 6:30 PM IST

Meeting Link
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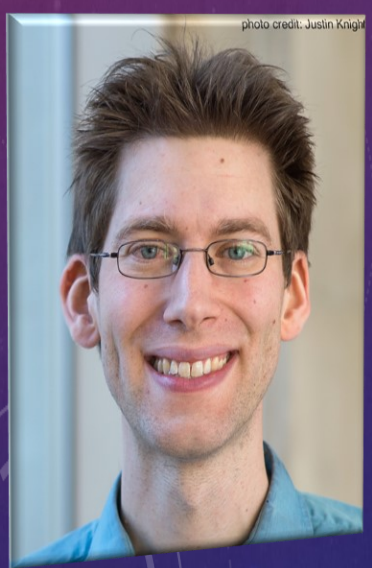
Abstract: Quantum computers offer power to solve some problems that goes far beyond what is possible classically. But classical computers have advantages that are likely to persist even when we have large quantum computers: they do not suffer from decoherence, and they can access large data sets. I will describe hybrid algorithms that combine the strengths of both platforms.

I will describe how quantum computers can assist optimization and inference over data sets too large for the quantum computer to access directly. The leading approach to using current and near-term quantum computers is a variational quantum algorithm, in which a classical computer is used to perform gradient descent over the parameters of a quantum circuit. I will describe challenges and opportunities for this class of algorithms.



About the Speaker: Aram Harrow is an Associate Professor of Physics at MIT where he has worked since 2013. Previously he worked at the University of Bristol and the University of Washington, and before that his undergrad and PhD were at MIT. He was the recipient of a 2009 APS Outstanding Referee Award, a 2015 NSF CAREER award, a 2017 IEEE Information Theory Society Best Paper Award, and the 2018 APS Rolf Landauer and Charles H Bennett Award in Quantum Computing award. His service to the field includes serving as PC chair for TQC (2014) and QIP (2018), as member of the steering committees for both conferences (QIP 2011-14, TQC 2015-present), and co-organizing several workshops on quantum computing.

Aram Harrow's research focuses on quantum information and computing. He works to understand the capabilities of the quantum computers and quantum communication devices we will build in the future, and in the process, he creates connections to other areas of theoretical physics, mathematics and computer science.

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