

Texas Tech Quantum Computing and IMSE Joint Seminar

April 30, 2021, 02:00 - 2:50 p.m. CST
<https://zoom.us/j/92939545211>

Quantum Computing Optimization & Quantum Interior Point Methods at the Quantum Computing Optimization Lab, Lehigh

Abstract

The Quantum Computing Optimization Lab. was established in 2018 at Lehigh. It is broadly recognized that Quantum Computing (QC) has the potential to revolutionize how we think about computing and optimization. We give a glimpse of the opportunities and challenges that QC optimization offers. Combinatorial optimization and IPMs are two hot areas of QC research. The applications of IPMs in QC include Quantum Information theory, where SDO with complex coefficient is a fundamental modeling tool. We provide a snapshot of how combinatorial optimization problems are solved on current NISQ (Noisy Intermediate Scale Quantum) computers, and discuss a Quantum IPM (QIPMs for SDO, and discuss the pros and cons of QIPMs).

Biography

Dr. Terlaky is a George N. and Soteria Kledaras '87 Endowed Chair Professor Department of Industrial and Systems Engineering, Lehigh University, and Director of the Quantum Computing Optimization Laboratory. He was also the Chair of the Department of Industrial and Systems Engineering in 2008 – 2017, and the Founding director of the School of Computational Engineering and Science 2004-2008 at McMaster University, Canada.

Dr. Terlaky has published four books, edited over ten books and journal special issues and published over 200 research papers. Topics include theoretical and algorithmic foundations of operations research (e.g., invention of the criss-cross method), design and analysis of large classes of interior point methods, computational optimization, worst case examples of the central path, nuclear reactor core reloading optimization, oil refinery and VLSI design optimization, robust radiation therapy treatment optimization, and inmate assignment optimization.

His research interest includes high performance optimization methods, optimization modeling, optimization problems in engineering sciences and service systems, and quantum computing optimization.

Dr. Terlaky is Founding Editor-in-Chief of the journal, *Optimization and Engineering*. He has served as associate editor of ten journals and has served as conference chair, conference organizer, and distinguished invited speaker at conferences all over the world. He was general Chair of the INFORMS 2015 Annual Meeting, a former Chair of INFORMS' Optimization Society, Chair of the ICCOPT Steering Committee of the Mathematical Optimization Society, Chair of the SIAM AG Optimization. He received the MITACS Mentorship Award; Award of Merit of CORS, Egerváry Award of HORS, OISS Award of IISE. He is Fellow of INFORMS, SIAM, The Fields Institute, and elected Fellow of the Canadian Academy of Engineering.



Dr. Tamás Terlaky