ZEGUAN WU

CONTACT INFORMATION

Lehigh University
200 W Packer Ave
Bethlehem, PA 18015

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Last updated: Dec, 2024

EDUCATION

Lehigh University — Bethlehem, PA
Ph.D., Industrial and Systems Engineering — May 2025 (*expected)*
Advisor: Tamás Terlaky & Xiu Yang

Columbia University — New York, NY
M.Sc., Operations Research — Dec 2019

Nanjing University — Nanjing, China
B.Sc., Material Physics — Jul 2018

RESEARCH INTERESTS

Quantum Linear Algebra, Quantum Computing, Optimization, Machine Learning

RESEARCH EXPERIENCE

Los Alamos National Laboratory — Los Alamos, NM
Mentor: Marc Vuffray & Sidhant Misra — 2023 - Present
Topics: Quantum Linear Solvers and Quantum Optimization

Lehigh University — Bethlehem, PA
Department of Industrial & Systems Engineering — 2020 - Present
Advisor: Tamás Terlaky & Xiu Yang
Topics: Optimization and Machine Learning with Quantum Computing

Columbia University — New York, NY
Department of Civil Engineering and Engineering Mechanics — 2019 - 2020
Advisor: Xuan (Sharon) Di
Topics: Bi-level Optimization in Traffic Network Modeling

WORK EXPERIENCE

Los Alamos National Laboratory — Los Alamos, NM
Graduate Research Assistant — 2023 - Now

Lehigh University — Bethlehem, PA
Research Assistant & Teaching Assistant — 2020 - Now

PAPERS UNDER REVIEW

1. "*An efficient quantum algorithm for linear system problem in tensor format*", **Zeguan Wu**, Sidhant Misra, Tamás Terlaky, Xiu Yang, and Marc Vuffray.

2. "*An inexact feasible interior point method for linear optimization with high adaptability to quantum computers*", Mohammadhossein Mohammadisiahroudi, Ramin Fakhimi, **Zeguan Wu**, and Tamás Terlaky.

3. "*Preconditioned quantum interior point method for linear optimization*", **Zeguan Wu**, Xiu Yang, and Tamás Terlaky.

WORKING PAPERS

1. "*An inexact feasible quantum interior point method using normal equation system*", Mohammadhossein Mohammadisiahroudi, **Zeguan Wu**, Arielle Carr, and Tamás Terlaky.

2. "*A quantum dual logarithmic barrier method for linear optimization*", **Zeguan Wu**, Pouya Sampourmahani, Mohammadhossein Mohammadisiahroudi, and Tamás Terlaky.

PUBLICATION

1. "*Improvements to quantum interior point method for linear optimization"*, ACM Transactions on Quantum Computing, Mohammadhossein Mohammadisiahroudi, **Zeguan Wu**, Brandon Augustino, Arielle Carr, and Tamás Terlaky.
2. "*An inexact feasible quantum interior point method for linearly constrained quadratic optimization*", Entropy, **Zeguan Wu**, Mohammadhossein Mohammadisiahroudi, Brandon Augustino, Xiu Yang, and Tamás Terlaky.

3. "*Quantum-enhanced regression analysis using state-of-the-art QLSAs and QIPMs*", ACM/IEEE Quantum Workshop, Mohammadhossein Mohammadisiahroudi, **Zeguan Wu**, Brandon Augustino, Arielle Carr and Tamás Terlaky.

CONFERENCE

1. "*Quantum Interior Points Methods for Linear Optimization*", SIAM-NNP Annual 2024, Rochester, NY.

2. "*A Quantum Dual Logarithmic Barrier Method for Linear Optimization*", MOPTA 2024, Bethlehem, PA.

3. "*A Quantum Dual Logarithmic Barrier Method for Linear Optimization*", SIAM Annual 2024, Spokane, WA.

4. "*A detailed implementation of QLSA for linear system problem in tensor format*", INFORMS Optimization Society Conference 2024, Houston, TX.

5. "*An inexact feasible quantum interior point method for linear and quadratic optimization*", INFORMS Annual 2023, Phoenix, AZ.

6. "*An inexact feasible quantum interior point method for linear and quadratic optimization*", MOPTA 2023, Bethlehem, PA.

7. "*An inexact feasible quantum interior point method for linearly constrained quadratic optimization*", IISE Annual 2023, New Orleans, LA.

8. "*An inexact feasible quantum interior point method for linearly constrained quadratic optimization*", Mid-Atlantic NA-Day 2022, Philadelphia, PA.

9. "*A preconditioned quantum interior point method for linear optimization*", Flash Talk, INFORMS Annual 2022, Indianapolis, IN.
10. "*A preconditioned quantum interior point method for linear optimization*", Poster, ICCOPT & MOPTA 2022, Bethlehem, PA.

TEACHING EXPERIENCE

Lehigh University:

2023S ISE 111 Engineering Probability, TA

2022F ISE 406 Introduction to Mathematical Optimization, TA

2022S ISE 305/404 Simulation, TA

2021F ISE 365/465 Applied Data Mining, TA

Others:

2023 Gene Golub SIAM Summer School, Optimization Laboratory Tutorial

ACADEMIC SERVICE

Session Chair, MOPTA, 2024

Session Chair, SIAM Annual, 2024

Session Chair, INFORMS Optimization Society Conference, 2024

Session Chair, SIAM-NNP Annual, 2023, 2024

Session Chair, INFORMS Annual, 2023, 2024

Staff, Gene Golub SIAM Summer School, 2023

Session Chair, IISE Annual, 2023

Vice President, Lehigh University INFORMS Student Chapter, 2022-2023

Volunteer, ICCOPT Conference, 2022

Reviewer for EJOR

Reviewer for Journal of Computational Science

Reviewer for Optimization and Engineering

AWARD

Los Alamos National Laboratory Quantum Computing Summer School Fellowship (2023)

Rossin Professional Development Program (2023)

COMPUTER SKILLS

Qiskit, Python, MATLAB, C++, GAMS, Cplex, GuRoBi, AMPL