

Jianqiang Li

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EDUCATION

Pennsylvania State University (PSU)

State College, PA, USA

Ph.D. Candidate in Computer Science and Engineering

Aug.2018 - present

- Advisor: Dr. Sean Hallgren
- Research Focus: Quantum Algorithms and Hamiltonian Complexity

Virginia Commonwealth University (VCU)

Richmond, VA, USA

Ph.D. Candidate in Computer Science

Jan.2017 - Aug. 2018

- Advisor: Dr. Sevag Gharibian
- Research Focus: Approximation Algorithms on Local Hamiltonian Problem

Beijing University of Posts and Telecommunications (BUPT)

Beijing, China

Master of Science and Computer Technology, School of Computer Science

Aug.2013 - May. 2016

- Thesis: Quantum State Representation Based on Combinatorial Laplacian Matrix of Star-Relevant Graph

Yunnan University

Kunming, Yunnan, China

Bachelor of Science in Information and Computer, School of Mathematics and Statistics

Aug.2009 - May. 2013

- Thesis: Classical Simulation of Shor's Algorithm

RESEARCH

Publications and preprints:

The authors of the following papers are listed in alphabetical order unless mentioned explicitly otherwise.

- Exponential speedups of quantum algorithms for finding an path in mild expander graphs. Under preparation, joint work with Yu Tong, 2023.
- Multidimensional Electrical Networks and their Application to Exponential Speedups for Graph Problems, joint work with Sebastian Zur, 2023. <https://arxiv.org/abs/2311.07372>.
- Exponential speedup of quantum algorithms for the pathfinding problem, 2023. <https://arxiv.org/abs/2307.12492>.
- Quantum algorithms for the pathfinding problem via the quantum electrical flow. Under preparation, joint work with Sean Hallgren, 2023.
- Limitations of the Macaulay matrix approach for using the HHL algorithm to solve multivariate polynomial systems, Quantum, 7:1069, 2023. Joint work with Jintai Ding, Vlad Gheorghiu, András Gilyén, Sean Hallgren <https://arxiv.org/abs/2111.00405>.
- Quantum state representation based on combinatorial Laplacian matrix of star-relevant graph, Quantum Information Processing, 2015-14(12), 4691-4713. <https://arxiv.org/abs/1507.05491>, (By contribution) Joint work with Xiubo Chen, Yixian Yang.

Talks:

Presented by Jianqiang Li

- “Limitations of the Macaulay matrix approach for using the HHL algorithm to solve multivariate polynomial systems”, (<https://www.youtube.com/watch?v=Sq6nrBzSbYk&t=1392s>), QIP talk, 2021
- “Quantum state representation based on combinatorial Laplacian matrix of star-relevant graph”, The Next Generation of Internet and Network Security International Conference Korea, 2015
- “Classical Computer and Turing Machine”, Zhejiang University China, 2014

Services:

- Journal reviewer: Quantum Information Processing, Quantum, Physical Review A
- Sub-reviewer (Conferences): QIP2021, QIP2022, ISAAC 2023
- Volunteer: VCU Computer Science Day Teaching

TEACHING EXPERIENCE

- Teaching Assistant of Math Tool in Computer Science (CSE 497)
Penn State University Jan. 2024 - May. 2024
University Park, USA
- Teaching Assistant of Algorithm Design and Analysis (CSE 565)
Penn State University Aug. 2023 - Dec. 2023
University Park, USA
- Full-time Mathematics Teacher
Tomorrow Advancing Life Apr. 2016 - Dec. 2016
Shanghai, China
- Teaching Assistant of Image Processing
BUPT Mar. 2014 - Jul. 2014
Beijing, China
- Teaching Assistant of Modern Cryptography
BUPT Aug. 2013 - Jan. 2014
Beijing, China
- Primary School Teacher
Aid Education in Rural Area Project Jul. 2011 - Aug.2011
Yunnan, China

ACTIVITIES

- Summer Cluster on Quantum Computing Simons institute, Jul. 2023
- Visitor of QuICS at University of Maryland hosted by Andrew Childs QuICS, Jun. 2023
- “Post-Quantum and Quantum Cryptography” summer school IPAM, UCLA, Jul. 2022
- “Quantum Numerical Linear Algebra” workshop IPAM, UCLA, Jan. 2022
- “Optimization Under Symmetry” workshop Simons institute, Nov. 2021
- “Quantum Cryptanalysis of Post-Quantum Cryptography” workshop Simons institute, Feb. 2020
- “Condensed Matter and Materials Physics Quantum Information” summer school University of Colorado Boulder, Jul. 2018
- Visitor of University of Paderborn invited by Sevag Gharibian German, May 2018
- “Hierarchies, Extended Formulations and Matrix-Analytic Techniques” workshop Simons institute, Nov. 2017
- “Quantum Information” summer school at Zhejiang University China, Aug. 2014

HONORS & AWARDS

- Outstanding Graduate of BUPT (top 5%) Apr.2016
- Wu Dagan Scholarship of Yunnan University Sept.2011
- Academic Scholarship of Yunnan University Sept.2010 – Sept.2013

REFERENCES

- Sean Hallgren: Advisor sjh26@psu.edu (Department of Computer Science, Penn State University)
- Chunhao Wang : cwang@psu.edu (Department of Computer Science, Penn State University)
- Sevag Gharibian: sevag.gharibian@upb.de (Department of Computer Science, Paderborn University).