Zhuangfei, Hu

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Research Interests

Algorithms and complexity; Quantum computing; Machine Learning

Education

- **Department of Computer Science and Technology**- Tsinghua University- Beijing, China — Aug 2016-June 2020
  B.E. in Computer Science (conferred), Overall GPA: 3.68/4.00, Top 20%.
- **China 3+1 Exchange Program (Mathematics)-** University of Waterloo- Ontario, Canada — Sep 2019-May 2020
- **David R. Cheriton School of Computer Science-** University of Waterloo- Ontario, Canada — Fall 2020-Feb 2022
  Master of Mathematics (dropout)
- **Related course grade:**
  Calculus(1) (A); Linear Algebra(1) (A); Discrete Mathematics(1) (A-); Calculus(2) (A); Linear Algebra(2) (A-); Probability and Statistics (A-); Numerical Analysis (A); Artificial Neural Networks (A-); Algorithm Design & Analysis (A);
- **Awards & Scholarship:**

Interdisciplinary Contest in Modeling (Problem D), Honorable Mention	2018
Sports Excellence Scholarship	2017-2018
Tsinghua Toyota Scholarship	2018-2019
Outstanding Graduate Award in Department of Computer Science	2020

Research (work) Experience

Quantum Computation Theories | Tsinghua University | RA — Apr 2018-Aug 2019

Advisor: Prof. Mingsheng Ying

- Studied basic quantum computation theories and quantum algorithms

Recovery from Non-decomposable Distance Oracles | RA — May 2021-Feb 2023

Advisor: Assist. Prof. Hongyang Zhang & Prof. David P. Woodruff

- Studied previous literature on distance-recovery problems
- Worked on constructing new recovery algorithms for non-decomposable distance metrics
- Worked on possible applications for new encodings

isQ Programming Language | RA — May 2023-July 2023

Advisor: Dr. Shenggang Ying

- Implemented quantum algorithm libraries for isQ programming language
- Provided tests and feedback for isQ language design

Quantum Diffusion Models for Image Generation | RA — July 2023-Present

Advisor: Assist. Prof. Hongyang Zhang

- Worked on quantum analog of latent diffusion models
- Implemented quantum diffusion pipeline with the pennylane framework

Publications

Zhuangfei Hu, Xinda Li, David P. Woodruff, Hongyang Zhang, and Shufan Zhang. Recovery from Non-Decomposable Distance Oracles. In 14th Innovations in Theoretical Computer Science Conference (ITCS 2023).

Hu, Zhuangfei, Xinda Li, David P. Woodruff, Hongyang Zhang, and Shufan Zhang. "Recovery from non-decomposable distance oracles." IEEE Transactions on Information Theory (2023).

Skills

Computer skills: C/C++, Python, LaTeX, Markdown, MATLAB

Languages: Chinese Mandarin (Native), English (Fluent)

TOEFL: Total 105 (Reading 30, Listening 27, Speaking 21, Writing 27)

GRE: V.159 (83%), Q.170 (96%), W.4 (59%)