

Juncheng (Harry) Zhang

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EDUCATION

Indiana University (August 2018 – May 2022)

Bachelor of Science

Major: Chemistry

Minors: Computational Linguistics, Math, Physics

Cumulative GPA: 3.74/4.00

RESEARCH EXPERIENCE

Todd Martínez Group, Stanford University (June 2022 –)

Theoretical, physical, and computational chemistry

- Tree tensor network quantum simulator
- Maintained [TeraChem](#), the group's GPU-accelerated electronic structure software
- Graph-theoretic molecular fragmentation for electronic structure

Srinivasan Iyengar Group, Indiana University (May 2019 – May 2022)

Theoretical, physical, and computational chemistry

- Created and maintained the group's graph-theoretic fragmentation toolkit and [its distributed computation backend](#)
- Graph-theoretic molecular fragmentation for electronic structure
 - Developed and implemented a general graph-theoretic method for molecular fragmentation
 - Benchmarked by running ab initio molecular dynamics and analyzing the resulting trajectory
- Quantum computing for electronic structure
 - Conceptualized and developed a hybrid quantum-classical implementation for the graph-theoretic fragmentation method, which dramatically reduced quantum circuit complexity
 - Benchmarked the implementation on quantum simulators and quantum hardware
- Publications:
 - **J. H. Zhang** and S. S. Iyengar.
J. Chem. Theory and Comput. (2022)
[Graph-|Q>C|](#): A Graph-based Quantum-classical algorithm for efficient electronic structure on hybrid

quantum/classical hardware systems: Improved quantum circuit depth performance

doi: [10.1021/acs.jctc.1c01303](https://doi.org/10.1021/acs.jctc.1c01303)

- **J. H. Zhang**, T. C. Ricard, C. Haycraft and S. S. Iyengar.

J. Chem. Theory and Comput. (2021)

Weighted Graph-theoretic methods for many-body corrections within ONIOM: smooth AIMD and the role of high order many-body terms

doi: [10.1021/acs.jctc.0c01287](https://doi.org/10.1021/acs.jctc.0c01287)

Francis Tyers Group, Indiana University (February 2019 – November 2019)

Computational linguistics

- Transfer learning for low-resource language text-to-speech
 - Collected and cleaned speech data
 - Pre-trained the speech embedding model using wav2vec
 - Adapted DeepSpeech for RNN transfer learning training

SKILLS

- Scientific computing / High performance computing
- Data analysis
- Programming languages (proficient): Python, Go, Rust

PROFESSIONAL ACTIVITIES

- Poster session (2021): Center for Quantum Technologies (CQT) - Industry-University Cooperative Research Center (IUCRC) planning meeting