Yuntai Song

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EDUCATION

Lanzhou University   Sep. 2020 – Jul. 2024(expected)
Bachelor of Science in Theoretical Physics   *Lanzhou Gansu, China*
GPA: 3.94/4.00 | 93.29/100.00 | Ranked 1/66 in Theoretical Physics | Top 1%

University of California, Riverside   Sep. 2023 – Jun. 2024(expected)
Graduate Preparation Program in Physics (extension)   *Riverside California, USA*

University of Illinois Urbana-Champaign   Aug. 2024(expected) – Jul. 2029(expected)
PhD Student   *Champaign Illinois, USA*

RECOMMENDATION AVAILABLE

Yin Zhong, Zheng Yan, Yizhuang You, Jaime Marian

RESEARCH EXPERIENCE

[1] Emergent Long- Range Interaction in Entanglement Hamiltonian   Jul. 2023 – Sep.2023
    Instructor:Prof. Zheng Yan   *Hangzhou, China*

- Made exact diagonalization approach to 1D Heisenberg Ladder system.
- Extracted the strength of Heisenberg operator with different interacting distance in the entanglement Hamiltonian to argue for the violation of Li- Haldane conjecture.

[2] Neural Quantum State Ansatz for Variational Monte Carlo Method   Aug. 2023 – Apr. 2024
    Instructor:Prof. Yizhuang You   *San Diego, USA*

- Used Neural Jastrow correlator for VMC to calculate the ground state of multi-flavor Fermion model.
- Used restricted Boltzmann machine ansatz for VMC to calculate the ground state of several spin models- transverse Ising model, Kitaev honeycomb model with magnetic field, etc.
- Used convolutional neural network (CNN) and group convolutional neural network (GCNN) ansatz for VMC to calculate the ground state of frustrated spin models,like $J_1 - J_2$ model.

[3] Monte Carlo Method for Quantum Error Correction   Nov. 2023 – present
    Instructor:Prof. Leonid Pryadko   *Riverside, USA*

- Developed Monte Carlo method for decoding process in quantum error correction.
- Used Bennett acceptance ratio method to find the error vector with lowest free energy.

AWARDS

National Scholarship 2021 (awarded by Chinese Ministry of Education)	**Nov. 2021**
National Scholarship 2022 (awarded by Chinese Ministry of Education)	**Nov. 2022**
Yan Jici Talent Students Program Scholarship (awarded by Chinese Academy of Science)	**May. 2023**

SKILLS

Programming Languages and Frames: Matlab, C and C++, Python, Mathematica, LaTeX,Jupyter Notebook
Scientific Software: OriginLab, VESTA