Shurui LI

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Education

Columbia University — New York, NY
Master of Science in Data Science — Sep. 2023 – Dec. 2024

East China Normal University — Shanghai, China
Bachelor of Science in Physics *with Highest Distinction.* (Ranking: 1/91) — Sep. 2018 – Jul. 2022

Awards

National Scholarship. 2020 (Top 1%)
East China Normal University Special Scholarship. 2021 (Top 1%)
East China Normal University Presidential Scholarship. 2021 (10/3600, The highest honor in ECNU)

Publications

[1] Rui Li, **Shurui Li**, Dongmin Yu, Jing Qian and Weiping Zhang. Optimal model for fewer-qubit CNOT gates with Rydberg atoms. ***Physical Review Applied****. 17, 024014(2022)*

[2] **Shurui Li**, Jianqin Xu, Jing Qian and Weiping Zhang. Revisiting the dynamics of Bose-Einstein condensates in a double well by deep learning with a hybrid network. ***Frontiers of Physics*** *17, 22504(2022)* (cover article)

Research and Professional experience

Microsoft Research — Feb. 2023 – Jun. 2023
Research Intern — Beijing, China

- Devised a soft-prompt based and a LoRA based methods, with DeepSpeed on multi-A100 GPUs, to improve $\sim 60\%$ of performance for private data attacks on Large Language Model (GPT-family) with limited access to models and exposed privacy ($\leqslant 10\%$ of other works).
- Built a new metric to detect memorization in GPT-Neo generated texts and quantified feature distribution gaps between created texts and memorized ones for protecting privacy and copyright, post more that 50% potential privacy risk.

TuSimple Inc. — Jul. 2022 – Feb. 2023
Residency Algorithm Intern — Beijing, China

- Enhanced the autonomous car's ability to handle danger by emphasizing the planner's attention to critical states by the Hessian of an adapted cost value from Apollo *w.r.t.* ego's acceleration and steering angle. Reduced instances of rule violations and collisions by $\sim 20\%$.
- Maintained Fusion/Prediction parts in auto-driving systems with Scene Transformer within MXNet framework in C++. Deployed SE(3) in- and equi-variant property for 30% improvement on multi-modal scenario-joint prediction score.

Tencent Ltd. — Jul. 2021 – Oct. 2021
Research Intern — Shenzhen, China

- Employed a protocol using theoretical pulses solved with a bounded calibration error function in open systems, as the initial control to fasten the optimization on quantum chips by on-policy Deep Reinforcement Learning, with 25% faster convergence and 0.12% higher fidelity to 99.7%.
- Maintained online control platform's database system with C++. Incorporated one real-time generated and one offline part as a search problem to hold the minimal set by checking and removing redundancy features. Resorted BM25/Attention in Recall stage and GBDT/BERT in Ranking stage, saving 40% cost for a single data r/w.

East China Normal University / Shanghai Jiao Tong University — Feb. 2020 – Jul. 2021
Research Assistant — Shanghai, China

- Adapted LSTM and Transformer to generate future dynamics of BEC in a double-well system in experiments. The hybrid network preserves physical properties and get a 68% reduction of infidelity in the MQST regime.
- Proposed an optimal model for neural Rydberg CNOT gate with a fidelity of 99.23%. Optimized control pulses using the Genetic Algorithm to get the best laser parameters in non-convex scenarios.

Skills

Programming: C/C++, Python, PyTorch, LaTeX, SQL
Languages Skills: Chinese(native), English(advanced)