

CSDS 500 and ECSE 500 Fall 2021 Colloquium

11:00 AM to 12:00 PM
Friday, October 15, 2021

Hybrid: Glennan 313 or
Zoom Webinar ID: 940 7438 8634
Passcode: 357363

“ Enabling robust quantum computer system by understanding the calibration data.”

Abstract: The growth of need for quantum computers in many domains such as machine learning, numerical scientific simulation and finance has urged the quantum computers to produce more stable and less error-prone results. However, to mitigate the impact of the noise inside each quantum device remains a present challenge.

In this project, we utilize the system calibration data collected from the existing IBMQ machines, applying fidelity degradation detection to generate the fidelity degradation matrix. Based on the fidelity degradation matrix, we define multiple new evaluation metrics to compare the fidelity between qubit topology of the quantum machines fidelity of qubits on the same topology, and to search for the most error-robust machine so that users can expect the most accurate results, and study the insight of correlation between qubits that may further motivate the quantum compiler design for the qubit mapping.



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Bio: Dr. Qiang Guan is an assistant professor in Department of Computer Science at Kent State University, Kent, Ohio. Dr. Guan is the director of Green Ubiquitous Autonomous Networking System lab (GUANS). He is also a member of Brain Health Research Institute (BHRI) at Kent State University. He was a computer scientist in Data Science at Scale team at Los Alamos National Laboratory before joining KSU. His current research interests include: fault tolerance design for HPC applications; HPC-Cloud hybrid system; virtual reality; quantum computing systems and applications.

This is to certify that _____ attended this seminar. Certified by _____.
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