

Google Industry Session

Jarrod McClean

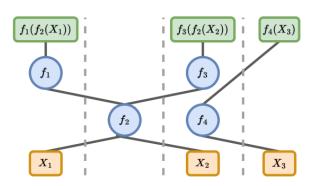
@JarrodMcClean

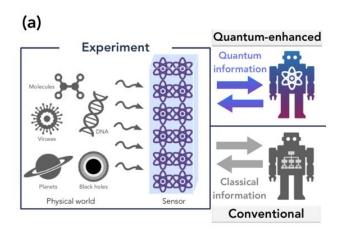
Senior Staff Research Scientist



Quantum Machine Learning







Can quantum influence anything we do in ML today?

No (ethical) topics are really off limits in this regime

Quantum data, classical data, transduction from sensors, large language models, quantum networks, theoretical studies, empirical studies, NISQ, fault tolerance, ...



Overall team priorities

NISQ is still a target of interest, but robust error correction appears to open many more doors.

Many QML topics won't suddenly become irrelevant if we as things improve

Application motivation for error correction and understanding how QML plays a role in the distance future remains a priority (Transduction? Sensing? Something on classical data?)

Are qubits more than just qubits?

Fig. 1: Implementing surface code logical qubits. 1Q - CZ - Meas. distribution umulative o 10-3 10^{-2} Pauli and measurement error rates Data qubit (d²) Measure qubit $(d^2 - 1)$ Unused Subset distance-3 Time



Paths to Google Quantum AI & Hiring



Internships

Our technical interns are key to innovation at Google and make significant contributions through applied projects and research publications. On the Quantum team, our interns work side-by-side with our researchers and help us tackle critical problems in quantum computing. Internships take place throughout the year, and we encourage students from a range of disciplines, including physics, computer science, and mathematics to apply to work with us.

- Research internships
- Software internships
- Hardware internships



Research Scientist

As an organization, Google maintains a portfolio of research projects driven by fundamental research, new product innovation, product contribution, and infrastructure goals, while providing individuals and teams the freedom to emphasize specific types of work. On the Quantum team, our effort is based on the successful development of gates, signal delivery hardware, benchmarking techniques, quantum control, and quantum devices. As a Research Scientist, you'll work with other scientists and engineers to address these exciting challenges, which lie at the intersection of physical insight, metrology, and engineering.

https://quantumai.google/team/career