

The State of Quantum Computing and the Future Roadmap

Quantum computing is a subset of Quantum Information Science (QIS) that harnesses the laws of quantum mechanics to solve large and complex problems that are otherwise intractable on classical computing. In the past decade, science and industry have progressed from the first prototypes to quantum processors with hundreds of qubits. Lots of positive announcements from companies in the last several years seem to believe that quantum computer utility will soon be at the door to revolutionize the way the information is processed. This presentation summarizes the current state of quantum computing, including public and private investments, research and developments from theory and algorithms to quantum computer hardware. The presentation highlights the engineering challenges that need to be addressed for the implementation of large-scale fault-tolerant quantum computers.