

Quantum advantage via Classical Control

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Abstract

The past few years of quantum computers' development have demonstrated the need for classical computing to be an integral part of the road to quantum advantage. At Quantum Machines we specialized in quantum-classical integration, out of necessity, to produce controllers able to handle the most complex quantum sequences, while allowing for seamless scaling up. In this talk, we will discuss how we can offload some of the challenges from the QPU to the classical control and how such classical technology can enable quantum breakthroughs. Some of these challenges include the complexity of scaling up, pushing fidelities of gates as well as state preparation, mitigating and correcting errors, and building flexible systems for research and development. We will show how Quantum Machines has approached such control challenges and announce recent breakthroughs and technological advancements.