

Abstract Submitted
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Developing Tic Tac Toe & Other Quantum Games for Hybrid Classical-Quantum Machine Learning Algorithms¹ ERIN STRICKLAND, CHAN KYAW, DR. THOMAS SEARLES, Howard University, SAMPL TEAM — Physics is used to resolve and understand some of today’s most complex questions in nature. Quantum mechanics, the basis of all quantum physics, describes or attempts to explain the behavior of subatomic particles at the quantum level. A few resulting fundamental concepts are superposition- what Einstein called “spooky action at a distance”, entanglement and interference. The emergence of the Quantum Age motivates all, from learning institutions to industries, to better understand and take advantage of these concepts to further quantum research, more specifically quantum computing, and ultimately quantum application in the future. A few research groups, such as Paul et. al. and Pal et.al., have utilized IBM circuits to demonstrate application of superposition and entanglement within their proposed quantum algorithms for programming quantum games. Utilizing the IBM Quantum Experience and framework as an experimental test bed, we further explore Tic Tac Toe as the foundation for other quantum, decision-based algorithms for quantum games to ultimately provide lasting, culturally relevant impacts in this new Quantum Age.

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