

Abstract

Quantum computers are slowly becoming a reality and establishing themselves as a useful piece of technology for solving a subset of real world problems which current classical computers are inefficient with. Quantum Machine Learning, a relatively new field of study, brings both the disciplines of quantum computing and machine learning together. Although, various quantum algorithms have been theorized from long time, practical implementations of these algorithms are made possible not very long ago. Many new quantum development frameworks have recently been launched by multiple organizations to enable quantum developers and researchers to test quantum algorithms on real quantum hardware. This research documents the basics of quantum computing and information processing. Furthermore, it makes use of the machine learning library defined in Microsoft's Quantum Development Kit to classify images of hand-written digits. It presents a comparative study of a hybrid classical-quantum data classification algorithm and few of the popularly known classical machine learning algorithms.