

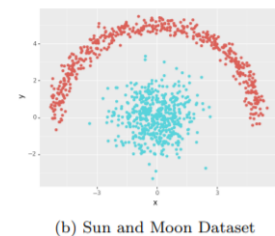
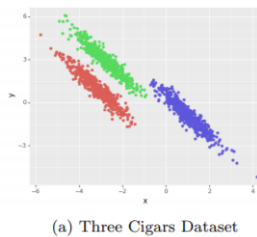
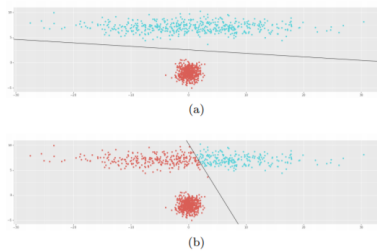
Student Research Talks (StReeTs)

George Mason University

Quantum Assisted Clustering for NISQ-era Devices

Guy Oldaker IV

Naval Surface Warfare Center
Dahlgren, Virginia



Abstract

Quantum computing and algorithm development are quickly becoming major areas of research due to the significant computational improvements they seemed poised to provide. Noisy intermediate scale quantum (NISQ) computers are devices that we will likely see in the near future. They employ 50-100 qubits without any fault tolerance. Within this category are the so-called adiabatic quantum computers. These devices and their associated algorithms seek to leverage the adiabatic theorem from quantum mechanics as a means to solving problems. In this talk, I will discuss some of the adiabatic hybrid quantum-classical algorithms being developed by the Applied Mathematics and Data Analytics (AM&DA) group at the Naval Surface Warfare Center in Dahlgren, VA. In particular, I will discuss two related algorithms. The first is a seed initialization algorithm for the popular clustering routine K-means. The second is a hybrid quantum-classical clustering routine. Prior to discussing these, I will give some background on quantum computing, the adiabatic theorem, and their relationship to our algorithms. I will also discuss some of the ideas we have for other applications and future work.

Date: Friday, September 27, 2019

Time: 2:30pm–3:20pm

Place: Exploratory Hall 4106

Pizza and soda will be served at the presentation.

For further information or for special accommodations (including dietary restrictions), please contact Tracey Oellerich or Cigole Thomas via email at toelleri@gmu.edu or cthoma40@gmu.edu by Thursday.