

Day 4

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Title: Energy Efficient Mobile Network Routing using Hybrid Quantum Algorithms

Abstract:

The essence of the mobile networking makes battery powered-portable devices a network entity of paramount importance. These devices consume energy while processing the communication messages internally and delivering them inbound/outbound. With limited amount of power supply, saving energy is very critical as an abrupt node die-out will jeopardize the network as a whole. Energy efficient mobile routing makes practical and down-to-earth optimisation problem. An ideal algorithm to this problem, is expected on one hand to deliver the communication message in a timely and lossless manner and on the other hand to save by the largest the energy consumption. In this work, we use the unleashed computational power of the quantum processor unit by DWave Inc. to attain the ground truth solution to this routing problem in general. We first used backtracking algorithm to formulate the candidate pool of the feasible path and then select the lowest energy path by forming a QUBO problem and submitting it to the DWave solver. We demonstrate that this hybrid algorithm outperforms the equivalent one employing a classical solver in terms of responsiveness and accuracy.