

OOKAMI PROJECT APPLICATION

Date: May 14, 2021

Project Title: Benchmarking for Quantum Resource Estimation

Usage:

Testbed

Production

Principal Investigator:

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Usage Description:

We will be running benchmarks to estimate the resource for quantum computing advantage. Quantum computing seems to be promising as a new approach that can yield speedup for some computational tasks. However, quantum computers at the moment still have sufficient amount of noise and errors that limit realistic applications. We will use Ookami to run simulations for certain computational tasks and compare them to simulations of noisy quantum processors in order to estimate what it might take for a noisy intermediate scale quantum processor to outperform classical computers.

Computational Resources:

Total node hours per year: 1000

Size (nodes) and duration (hours) for a typical batch job: 1-3 nodes for 2 hours or 1
node for 3 to 5 hours

Disk space (home, project, scratch): (20GB, 500GB, 1TB)

Personnel Resources (assistance in porting/tuning, or training for your users): Assistance in training for users

Required software: typical Python scientific packages, tensorflow, and other libraries such as LAPACK, MKL or OpenBLAS

If your research is supported by US federal agencies:

Agency: NSF

Grant number(s): PHY 1915165

Production projects:

None