

Performance Benchmarks for Qiskit Machine Learning

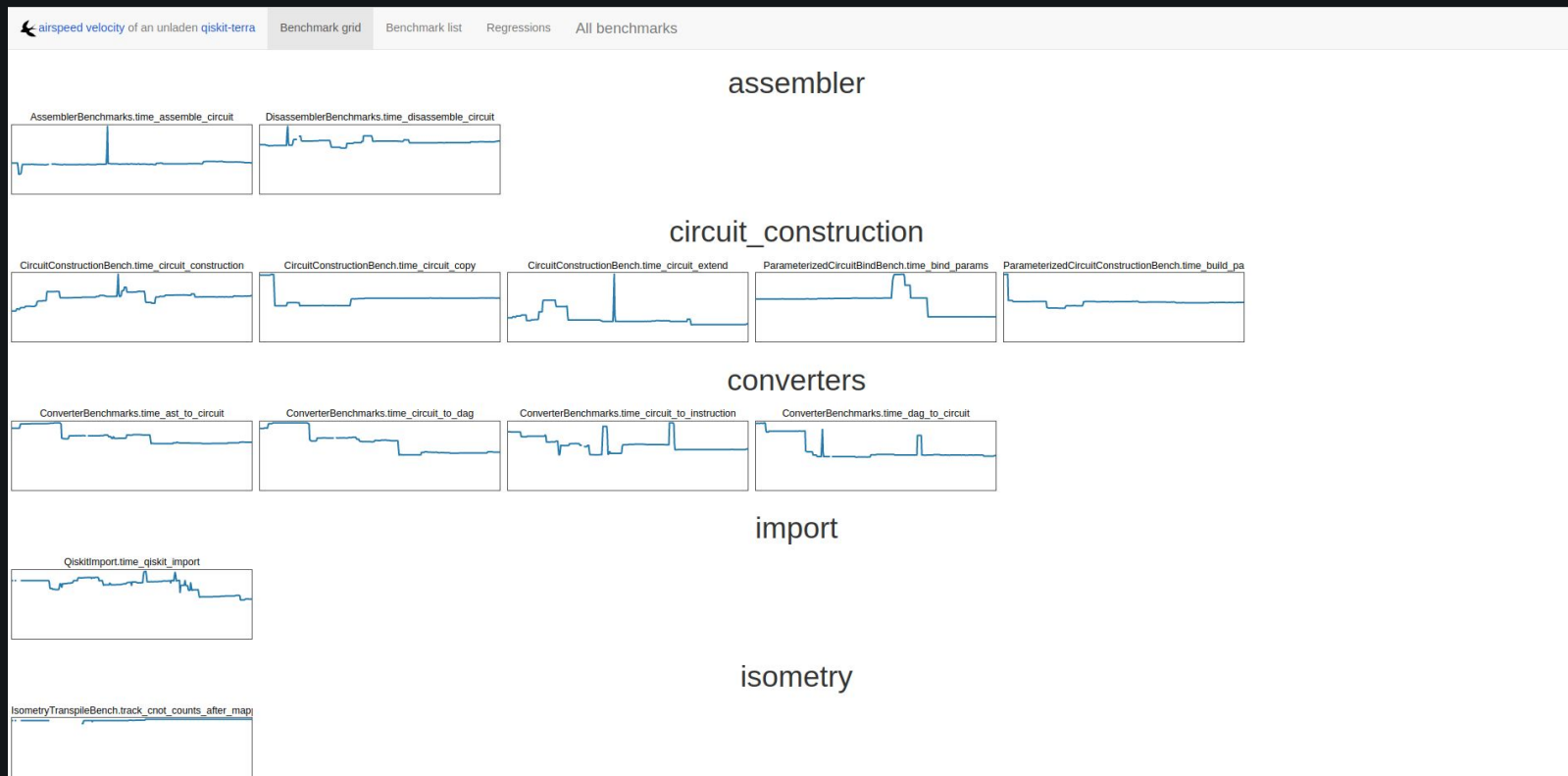
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Benchmarking

- Performance benchmarks measure the metrics such as memory consumption, time taken for execution and score of a ML model over the lifetime of a project
- Important to track benchmarks to ensure functionality improves over time
- Benchmarks currently exist for Qiskit Terra and are being written for Qiskit applications except for Qiskit Machine Learning

ASV - Benchmarking Interface



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Progress

- Implemented benchmarks measuring time to run ML regression models
- Included subsample of Iris dataset to use in benchmarks as well as synthetic data
- This project catalyzed the re-thinking of the overall design of benchmarks and led to introduction of a 'version' property

Additional Contributions

- Working on a 'first good issue' in the Qiskit ML repo

To do

- Add benchmarks for score
- Add benchmarks for quantum kernel ML including memory consumption
- Add real dataset to benchmark with for regression models
- Brainstorm ideas of other useful benchmarks in the ML space

- Working on a draft implementation of a quantum binary neural network to be added to the Qiskit ML repo