

TERM

Create Qiskit Utilizer For Unity

B3 RYOM

Background : Unity and Quantum Game

- Unity

- The “Game Engine” which allows Everyone to make game.

- Quantum Game

- Very young Genre of computer game which uses Quantum Computer.

Term project → Provides Easy way to Setup and run Quantum Circuit

Why Quantum Game? Why Unity?

- Why Quantum Game?

Because...

- I'm very curious about how Game will change with Quantum Computer.

- Why Unity?

Because...

- It could be Entry for Quantum Game for most people.

Why Quantum Game?

QuantumGame → Game that uses Quantum Computer

- Most Are made with python or JavaScript Online.

Difficultys

- Problems that “Qiskit Unity Asset”
(Only choice to build Quantum Game On Unity) has.
 - ❑ Can not make game Standalone
 - ❑ Need to know “QASMString” to build quantum circuit.
 - ❑ Complex setup

Qiskit Utilizer for Unity

Features of Qiskit Utilzer for Unity

- Easy Setup
- Easy Implementing
- High Expandability

What Have been improved?(Compared to Conventional Qiskit Asset)

Easy Setup

Qiskit Utilizer for Unity Will...

- Automatically Setup and Embed server to Unity Project.
- Automatically Run Local Server internally.
 - →Can make Standalone Build

Easy Implementing

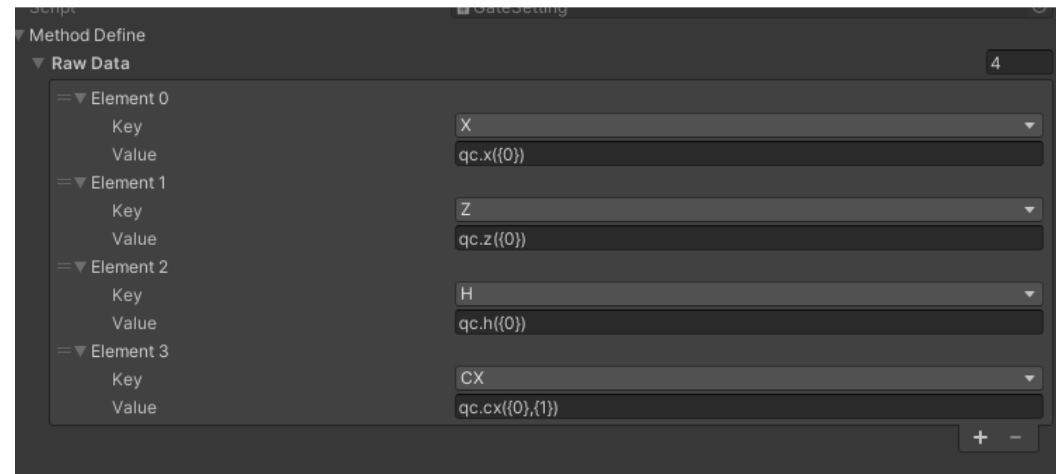
- Using Class: “Quantum Circuit”
 - Developers will easily build quantum circuit intuitively.
 - Will Internally Communicate with server and
 - No need to know “QASMString” or “Qiskit”
- Please Take a look at Documentation for further information.

High Expandability

- You Can Customize

```
public bool AppendGate(Gates type, params object[] arguments)
```

With “Gate Setting” to make other Qiskit Methods Available on Unity.



Problems

- There are not much people making Quantum Game.
 - Could not find people for Testrun.
- I will introduce this asset at next Quantum Game jam to take survey
- Data Volume is too big, due to embedded server.