**Project Status Report**

**Northrop Grumman – Quantum AI AT The Edge**

**As Of: 02/11/2022**

**Project Status Summary**  Percent Complete: 25%

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Scope | Schedule | Cost | Risks | Quality |

Risks

The sponsor has communicated that this project is fully R&D and exploratory by nature. There is a high probability that the project will not actually work. However, we will certainly be doing our best. If the quantum piece fails to show improvements over traditional models, then traditional models will be used for inference on the emulator.

# Work Planned for Last Week

Each team continued to work together to familiarize themselves with their respective development environments now that everyone has their machines setup and we have a solution for running models on the emulator. We are also going to continue working on our high level solution design.

# Work Completed Last Week

We found that we were able to setup a full development environment using WSL2, Jupyter Lab, and a Python Virtual Environment. The team worked to build out the environment with all the dependencies such as Sci-kit learn, Keras, TensorFlow, Cirq, Qiskit, Pandas, Numpy, etc.. The team then encapsulated the environment using the python 3 venv tool. This allowed us to push the requirements to the repo and then install everything on everyone’s machines with minimal issues. Now everyone in the group has the same development environment, using the same tools, and the versions of the tools are all consistent across all machines and operating systems. Additionally, we also were able to push all of the CSV files to the git repository. Last, we made a Jupyter notebook with all of the CSV files loaded into Pandas data frames. We are now able to finish our high-level solution design and begin coding.

# Work Planned For Next Week

We will finish out our high-level solution design for both the quantum and classical machine learning teams. We also plan to start coding and begin our implementation for the project. The quantum team will begin their development with Google Cirq and IBM Qiskit. The classical ML team will begin their development using TensorFlow and other standard python machine learning tools.

# Open Issues

* They are currently no open issues.

# Deliverables and Milestones

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Milestone | WBS | Planned | Forecasted | Actual | Status |
| Initial development environments | 002 | 10/11/2021 | 10/11/2021 | 10/12/2021 | Complete |
| Supplemental development environments | 004 | 10/30/2021 | 10/30/2021 | 10/31/2021 | Complete |
| Setup Vitas | 006 | 10/21/2021 | 1/15/2021 | 1/14/2021 | Complete |
| UML Solution Design | 008 | 01/31/2022 | 02/18/2022 | TBD | Incomplete |
| Deliverable | WBS | Planned | Forecasted | Actual | Status |
| Setup git branches | 003 | 10/3/2021 | 10/3/2021 | 10/3/2021 | Complete |
| Project Charter Updates | 001 | 10/14/2021 | 10/15/2021 | 10/14/2021 | Complete |
| Requirements Document | 005 | 10/21/2021 | 11/08/2021 | 11/15/2021 | Complete |
| First Use Case | 007 | 10/21/2021 | 10/24/2021 | 10/24/2021 | Complete |

# Open Change Requests

|  |  |  |  |
| --- | --- | --- | --- |
| Change Request Name | Change Request Number | Request Date | Current Status |
| NA |  |  |  |
| NA |  |  |  |

# Key Performance Indicators (KPI's)

**Schedule** - Project is on schedule

Schedule Variance (SV): +/- 2 days

**Cost** - Project is on budget

Cost Variance (CV): $0