**Project Status Report**

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

**As Of: 02/20/2022**

**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

We began researching quantum and classical algorithms to run on the Vitis Emulator. We started coding and began our implementation for the project. The quantum team has been researching quantum algorithms that are best suited for running for inference on the emulator. The classical ML has been researching SVM’s and MLP’s using TensorFlow and other standard python machine learning tools.

# Work Completed Last Week

We have now split into two teams of four, the classical ML team and the quantum ML team. The quantum ML team has been diligently researching quantum algorithms best suited to this problem. They have also been doing tutorials with Qiskit and Cirq to better understand their development tools. We reached out the sponsor seeking further information about what they are looking for on the quantum side of things and what our threshold of failure should be on the quantum side because there is a high probability that the quantum side would not work to begin with. The classical ML team began researching how to implement SVM’s and MLP’s in TensorFlow because that is the library that will most easily translate to the Vitis emulator.

# Work Planned For Next Week

We also plan to continue our research, coding, our implementation for the project. The teams are beginning to hit their respective strides as they become more familiar with the data and their development 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 |
| 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