**Project Status Report**

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

**As Of: 03/13/2022**

**Project Status Summary**  Percent Complete: 50%

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 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 planned to take the classic MLP model and export and then import it into Vitis to be used for inference on the Vitis embedded emulator. We have redelegated two members of the classical team to the quantum side. The classical team is now a skeleton crew until the model is successfully running on the emulator. Once we achieve this, we will have met out baseline deliverable with our sponsor. After we can run the classical MLP on the emulator the entire team will be working on the quantum models for the rest of the semester per the expressed interests of the sponsor.

# Work Completed Last Week

The classic MLP was exported. We were able to quantize and recompile the model in Vitis. However, when it comes to deploying the model to a hardware embedded emulation target we have reached a block. We have reached out to Xilinx/Vitis for help and the sponsors for additional support in this area but have received nothing yet. The sponsors have also communicated that they themselves are unfamiliar with the platform and do not have a support contract in place with Xilinx. As a result, we are hopefully waiting for a response on the Xilinx support forums to resolve our issue. The platform has poor documentation as well as version conflict between tutorials on their site. As a result, we are blocked in this area. We are focusing on further developing our models while we wait to hear back about our issue. We worked at length with our project mentor in this area, and mad zero progress. The quantum team is close to completing their quantum SVM, while the classical team is working to get the MLP’s accuracy above 90%.

# Work Planned For Next Week

We will continue to refine the models while we wait for someone from Xilinx or the project sponsors to get back to use regarding the hardware emulation component of this project. Until this happens we will just continue to refine both of our classic and quantum machine learning models.

# Open Issues

* Waiting to hear back on the Xilinx support forums regarding our issue with hardware emulation.

# 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 | 2/24/2022 | Complete |
| 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