

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
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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 made 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