

Sprint Review Meeting Minutes

Attendees: Christopher Kverne, Nathan Lioe-A-Tjam, Isabella Anthony

Start time: 02/8/25/2026 6:55pm

End time: 02/8/25/2026 7:15pm

After a show and tell presentation, the implementation of the following user stories were accepted by the product owners:

- **Task 10:** Explore the PennyLane documentation and the Qiskit documentation in order to leverage these tools in the research.
- **Task 11:** Practice with PennyLane in order to leverage its integration with libraries like PyTorch for building Quantum Circuits. This framework is effective for working with Quantum Neural Networks, automated gradient calculations and much more.
- **Task 12:** Practice with Qiskit ensuring understanding. Qiskit is helpful as it provides the tools for deep level circuit manipulation that higher-level abstractions might hide
- **Task 13:** Understand Fisher Information as a geometry on model behavior and its role in defining the natural gradient. This is extremely important in order to understand how much the model's output distribution changes relative to a small shift in parameters
- **Task 14:** Research and understand how Natural Gradient descent works. Understanding how it rescales the gradient using the inverse Fisher Information Matrix to ensure consistent step sizes regardless of how the model is parameterized is a crucial concept.
- **Task 15:** Understand why Riemannian Hessians are better suited compared to Euclidean distance. Understand that Euclidean distance fails in optimization because it treats all parameter directions as equal. Riemannian Hessians incorporate the curvature allowing for second-order updates which is much better suited for the quantum landscape.

The following ones were rejected and moved back to the product backlog to be assigned to a future sprint at a future Spring Planning meeting. None