# Meeting Agenda

Date: November 10, 2021

Time: 5:30 PM – 6:00 PM

Location: ILC Room 220

## Agenda:

1) Mini-Project Debrief

* What was one thing you learned that was cool?
* Where do you feel like your Quantum Computing skills are (i.e. are you able to code algorithms independently, do you understand the basic QC gates, do you feel like you understand all/most of the concepts that you have covered?)

2) Schedule for the remainder of the semester

* Option 1: Spend rest of the semester learning about and applying Variational Quantum Circuits and then spend Christmas Break learning about the theory of GANs. Hit the ground running in second semester.
  + Pros: Create a cool application of VQC and have created something meaningful sooner. Have a more solid QC foundation (generally) and specific to VQCs moving forward. Get a more diverse experience with different applications of Quantum Computing.
  + Cons: Would be a decent amount of work over Christmas break to learn about GANs. I would help prepare tutorials and resources and would delegate learning responsibilities based on different project tasks, but it would still be a big effort to be at a point where we could start building QGANs at the start of second semester.
* Option 2: Spend a week or two learning about the basics of VQCs without applying it. Move on to basic QGANs and try to learn the basic ideas before the end of first semester. We could spend the Christmas break implementing a basic version.
  + Pros: Move on faster to the actual topic/goal of our project. With more time we may be more likely to make progress. Similarly, we would have more time to learn about the theory of GANs and become familiar with them.
  + Cons: I am slightly concerned about the jump in complexity from the algorithms we have looked at to QGANs. I’m not sure if we have a sufficient base to move on yet (although we may after learning a bit about VQCs).
* Option 3: Combination of both. People can work on a smaller VQC project while simultaneously learning about the ideas of GANs.
  + Pros: We get the best of both worlds from the previous projects.
  + Cons: This is a big ask for less than 4 weeks until the end of the semester (we’re not going to work during exams on QMIND stuffy). We would have to seriously consider whether we have enough time to commit to this.

What would this VQC project look like? I’m open to ideas, but my thinking would be groups of two implementing a VQC for an interesting application (i.e., financial trading optimization, molecule modelling, etc.).

3) Tasks for next meeting:

* Go through the VQC Notebook and read through the other resources listed there. Understand:
  + How a VQC works (ansatz, circuit optimization, Hamiltonian)
  + How one is implemented as a Quantum Circuit
* We will be discussing VQCs and people’s understanding next week.