How to Get Started in Quantum Computing

Natalie Hawkins, Seattle Quantum Computing Meetup, Seattle, USA, nrhawkins@gmail.com

Abstract: Quantum Computing generates a lot of excitement. People light up. People sparkle. People want to understand what it is, how it works, where it's at, what it needs, and how they can get involved. Many working professionals with backgrounds in fields such as physics, chemistry, computer science, math, engineering, and others frequently ask: how can I get started? The answer can be long and detailed. There are a variety of ways to learn, outside of being a student in a formal academic program. The amount of content related to quantum computing is large, involving the qubits or qudits, the controls like lasers or microwaves, how to implement gates, how to implement error correction, how to program a quantum computer, how to design quantum algorithms, and how to apply a quantum computer to applications. The learner must prioritize and choose a path on this journey. We suggest identifying questions of interest, starting a project, and injecting freshness into both, as it is oft stated that "fresh ideas are needed". We offer a github of resources containing Q-and-A guides to support the newcomer's enthusiasm and interest and to help accelerate their journey. We see this as a win-win-win-win situation for us, for them, for Quantum Computing and for society.

Keywords: quantum computing, career transition, continuing education, helping people, energy, enthusiasm, fresh ideas

Relevance: the poster relates to the Quantum Computing topic, and to the Quantum Education and Training topic.

How to Get Started in Quantum Computing

Natalie Hawkins
Seattle QC Meetup
Seattle, USA
nrhawkins@gmail.com

Abstract— **Quantum Computing generates a lot of excitement. People light up. People sparkle. People want to understand what it is, how it works, where it's at, what it needs, and how they can get involved. Many working professionals with backgrounds in fields such as physics, chemistry, computer science, math, engineering, and others frequently ask: how can I get started? The answer can be long and detailed. There are a variety of ways to learn, outside of being a student in a formal academic program. The amount of content related to quantum computing is large, involving the qubits or qudits, the controls like lasers or microwaves, how to implement gates, how to implement error correction, how to program a quantum computer, how to design quantum algorithms, and how to apply a quantum computer to applications. The learner must prioritize and choose a path on this journey. We suggest identifying questions of interest, starting a project, and injecting freshness into both, as it is oft stated that "fresh ideas are needed". We offer a github of resources containing Q-and-A guides to support the newcomer's enthusiasm and interest and to help accelerate their journey. We see this as a win-win-win-win situation for us, for them, for Quantum Computing and for society.**

Keywords—quantum computing, career transition, continuing education, helping people, energy, enthusiasm, fresh ideas

I. INTRODUCTION

We all can imagine quantum computing as having a big impact on the future. We can't predict exactly when that future will be, or exactly in what ways the impact will happen. But, we can imagine optimistically. With this and the human nature to push forward into new territories in mind, we want to help people who want to get started in quantum computing. We would like to support their energy and enthusiasm, help them to progress efficiently, and hopefully maximum the bang for the buck for all of us.

II. FRESH IDEAS

A. Early Days – "Under Development"

Clearly, quantum computing is in an "early days" stage. It is "under development". There are many challenges [1]. Given this, of course, there is extreme need, openness, and opportunity for "new ideas". It is oft-stated that "fresh ideas" are needed, including very recently during the Qiskit Global Summer School Distinguished Speaker presentation given by John Preskill [2].

B. Emphasis on Fresh Ideas

As we get underway to suggest an approach to Getting Started in Quantum Computing, we want to place an emphasis on the newcomer to always try to consider and entertain "fresh". Fresh as good. Fresh as needed. Fresh, like fresh air, fresh laundry, fresh outta the shower, fresh bread, fresh fruits and vegetables. Not always the best, that is, fresh, but in many cases fresh can be very nice! Try to keep it fresh!

III. SUGGESTED APPROACH TO GETTING STARTED

We suggest the newcomer take advantage of all the resources included in Fig. 1. We recognize that the field of Quantum Computing is quite large and can take considerable time and effort to intake, given our current human neural condition. Therefore, we suggest starting this way:

1) write out questions of interest and find answers for them one-by-one.

2) try to operate in project mode to focus and to provide conversation material when interacting with others.

In both cases we recommend trying to insert a little bit of "fresh" to expand one's thinking and to make such an expansion a bit of a habit, maybe even an addiction.

IV. INDIVIDUAL SCENARIOS

Working professionals come in many forms. Not everyone wants to learn the same stuff. There's a lot of room in all sorts of places for all sorts of folks. People have differing amounts of time to dedicate. We select a few cases to highlight the variety of newcomers.

A. Software Engineer who wants to write code, but not program quantum computers directly

This person may not need to learn anything "new", so to speak, to perform this job, but may wish to become more familiar with quantum computing. Searching online with questions, and viewing talks are great ways to get started.

B. Someone who wants to program a quantum computer

This person will need to learn a quantum SDK, such as Qiskit, or will need to find an interface, possibly a la Classiq, that can reach the hardware with their desired instructions and goals. Qiskit coding challenges are a great way to get started, as Qiskit is the most popular quantum SDK, though the person may wish and have reasons to pursue coding in one of the variety of other options.

C. Someone who works in a technical non-coding role and wishes to keep it that way, and possibly works on hardware or chemistry or interfaces w/customers

This person might enjoy participating in a Challenge, where they can offer their expertise to a group. They might enjoy a Qiskit coding challenge for the short-term thrill and experience.

Fig. 1.   The many ways of learning about quantum computing.

GITHUB OF RESOURCES

We encourage you to visit our github [3], where we offer more in-depth information and "getting-started" guides. Also, feel free to join our meetup [4].

ACKNOWLEDGMENT

REFERENCES

[1]   Wikipedia, Quantum Computing, Challenges (https://en.wikipedia.org/wiki/Quantum_computing).

[2]   Qiskit Channel, YouTube, Qiskit Global Summer School 2025, https://www.youtube.com/@qiskit/featured.

[3]   github.com/orgs/Seattle-Quantum-Computing-Meetup/getting-started/

[4]   https://www.meetup.com/seattle-quantum-computing-meetup/

How To Get Started in Quantum Computing
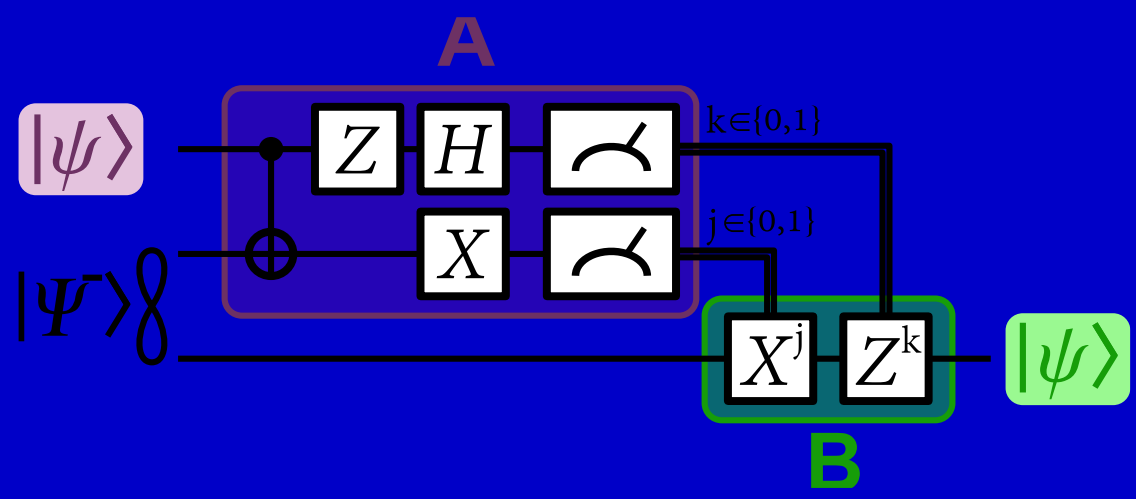
Natalie Hawkins (https://www.linkedin.com/in/natalie-hawkins-seattle/)[1]
[1]Seattle Quantum Computing Meetup (meetup.com/seattle-quantum-computing-meetup/)
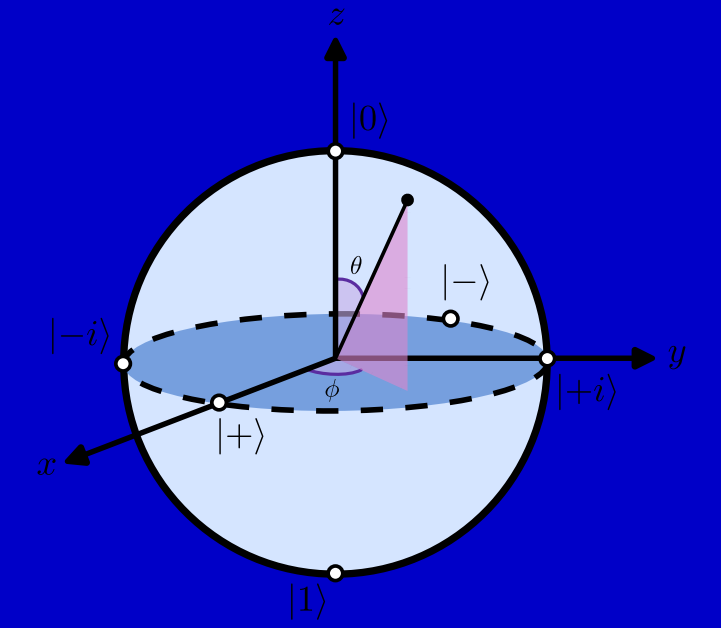
Background

Working professionals with backgrounds in fields such as physics, chemistry, computer science, math, engineering, and others commonly ask **how to get started in Quantum Computing**. The answer can be long and detailed. Here is a path for a **quick entry from zero, emphasizing insertion of "fresh", and a github to find more**.

Speed ramp to getting started

You can learn in various ways:

QC content is large. How can you prioritize?
1) Identify questions, insert freshness
2) Start a project, push for fresh

Identify Questions

Q: What does the field need?
- Hardware, software, error correction, algs, applications; See John Preskill's QGSS25 talk, Qiskit Channel, YouTube

Q. What are good resources for getting/staying current?
- Conferences: IEEE's Quantum Week and Q2B
- News: LinkedIn, X/BlueSky, QComputingReport, ChiQE
- Papers/Articles : arXiv, sciRate, Medium
- Blogs: scottaaronson.blog, ibm.com/quantum, etc.

Q: What is Quantum Computing, or what isn't it?
See "What Quantum Computing Isn't", Scott Aaronson's TEDx talk on YouTube, and there are many, many others

Q: How can I learn about available jobs in QC?
- QuantumJobs.us
- QED-C Job Listings
- Subscribe to the ORNL newsletter
- The Quantum Computing Report (QCR) jobs list
- Company and University Websites, LinkedIn

Theme: Fresh

It is commonly said, "we need fresh ideas". Try to fresh your way to checking more of the boxes. As an example, Feynman said, "nature isn't classical". What else is nature? Fractal? How does nature control? Free your mind.

For More Q's and A's, including individual scenarios, see the Free Guides →

Start a Project

Starting a project will help you focus and give you something to talk about. You can choose a topic related to your work, or something new that you wish to learn or do. Try adding fresh.

You can get ideas from: (in addition to Search)
- Hackathons and Challenges (live or github)
- Medium (look for project writeups)
- Books (which include or suggest projects)
- LinkedIn/Blogs/Papers/Books (applications)

Conclusion

Helping people act on their enthusiasm and interest **can really be a win-win-win-win,** for you, for them, for QC, and for society. Visit the github to find guides to go deeper, and to assist and accelerate the journey. *Feel free to reach out with ideas, and to join the meetup*.

Acknowledgements

Wikimedia Commons for logos: QT circuit (JozumBjada), Bloch Sphere (Qupybara)

Free How-To Getting-Started Guides

See github.com/orgs/Seattle-Quantum-Computing-Meetup/getting-started/.