Research Diary: Meetings and Progress

Davide Rossi

October 22, 2024

Meeting Details

- Date: October 9, 2024
- Time: 10:30 AM - 12:00 PM
- Location: CS Department, Pisa

Topics Discussed

1. Introduction to Quantum Computing.
2. Quantum Circuit and Implementation of Data in QC.

Tasks Agreed

Tasks/Objectives Assigned

- Read "QRAM: A Survey and Critique" by the next meeting.

Work Done at Home

- Read "QRAM: A Survey and Critique".
- Read "QRAM for dummies
- Worked on improving understanding of Quantum Circuits.
- Started learning Qiskit Library

Next Meeting

- Next meeting scheduled: October 18, 2024

Meeting Details

- Date: October 18, 2024
- Time: 11:00 AM - 12:00 PM
- Location: CS Department, Pisa

Topics Discussed

1. Review of completed code.
2. Discussion on QRAM.
3. XGate annulation formula discussion.
4. Universal Gates' Sets and their possible representations in the thesis.
5. Parametric program creation for FF-QRAM analysis.

Tasks Agreed

Tasks/Objectives Assigned

- Finish the code by next meeting.

Feedback and Suggestions

- Demonstrate the XGate annulation formula.
- Study the concept of "transpiling" in quantum computing.

Work Done at Home

- Worked on completing the code.

Next Meeting

- Next meeting scheduled: October 28, 2024.

Meeting Details

- Date: October 29, 2024
- Time: 11:00 AM - 12:00 PM
- Location: CS Department, Pisa

Topics Discussed

1. Spoke about XGate optimization.
2. Tried to find a formula and a representation to optimize the XGates.
3. Spoke about Gray code.
4. Review of code.
5. Spoke about how to plot the graphics about size and depth on dataset.

Tasks Agreed

Tasks/Objectives Assigned

- Finish the code by next meeting.
- Trying to implement Gray code, Standard representation, and some creative more optimized representation
- See transpiler.optimizationlevel

Personal Notes

- Read Circuit-Based Quantum Random Access Memory for Classical Data
- Read Quantum Circuit Optimization: Current trends and future direction

Work Done at Home

- Worked on the plot of size and depth: code.
- implemented Gray Code

Next Meeting

- Next meeting scheduled: November 19, 2024.

Meeting Details

- Date: November 19, 2024
- Time: 10:00 AM - 11:00 AM
- Location: CS Department, Pisa

Topics Discussed

1. conjecturate a formula for XGate optimization of XGates.

Tasks Agreed

Tasks/Objectives Assigned

- Demostrate the formula.
- Confrontate the GrayCode with the Qiskit Transpiler optimization.
- Remember what we've done the meetings before.

Work Done at Home

- Written the demonstation for the formula for GrayCode on gate X
- Worked a little bit on transpiler for qiskit, Read the documentation

Next Meeting

- Next meeting scheduled: December 4, 2024.

Meeting Details

- Date: December 4, 2024
- Time: 11:00 AM - 12:00 PM
- Location: CS Department, Pisa

Topics Discussed

1. Discussed and read the formula for XGate optimization of XGates.

Tasks Agreed

Tasks/Objectives Assigned

- Code to see the graphs on the formula application on the FF-QRAM)
- Correct the demonstartion

Work Done at Home

- Worked on the Code

Next Meeting

- Next meeting scheduled: December 20, 2024.