

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 39, 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.