Tejas Naik

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Summary

I am an incoming graduate student at University of Waterloo, Institute of Quantum Computing (IQC) for Masters in Physics with Quantum Computing specialization (Fall 2022) with a full scholarship awarded by IQC. I am a passionate student with field of interest in Quantum Computing and Quantum Information Science. Motivated to explore this upcoming field and its interdisciplinary applications. Adept in quantum modules based on python such as Qiskit, Cirq, QIBO, Pennylane etc. and have a working knowledge of Machine learning. Looking for part time jobs or internships in this domain.

Education

Indian Institute of Technology (IIT), Roorkee | Roorkee
Engineering Physics (BTech.) (July 2018 - May 2022)
CGPA (on a 10 point scale) : **9.069** (First Division with Distinction)

Pace Jr. Science College, Andheri | Mumbai
Intermediate (Class XII) (June 2017 - May 2018)
Percentage : **89.54%**

Dr. N.P. Shah English Medium School, Agashi | Virar
Matriculation (Class X) (June 2015 - May 2016)
Percentage : **95.00%**

Internships

Nanyang Technological University, Singapore
Undergraduate Research Intern | 02/2021 - 08/2021
Supervisor : Dr. Rainer Helmut Dumke, Associate Professor, NTU Singapore

Description : Worked on the topic of Randomized Benchmarking, an important quantum protocol for quantifying errors and studied its variants. Implemented the protocol in QIBO, a classical simulator framework for quantum simulation by generating random Clifford elements using 3 methods. Also implemented the Clifford element decomposition from stabilizer table having optimal number of CNOT gates for 2-qubit Clifford group.

Projects

BTech Project : Quantum Error Correction Surface Codes (July 2021 - April 2022)

- **Supervisor:** Prof. Sugata Gangopadhyay, Head of CSE Department, IIT Roorkee.
- **Collaborating Organisation:** Centre for Development of Advanced Computing (CDAC) Hyderabad
- **Description:** I worked on running the surface code architecture on IBM Qiskit for different values of distance and obtain analysis on error rate vs. distance of surface code. Benchmarking of QSim (India's first indigenous quantum simulator) was done with respect to the IBM Qiskit with current limitations and possible solutions to run such quantum experiments being pointed out through this project.

Analysis of Quantum Fourier Transform using IBM Qiskit (Feb 2021 - April 2021)

- **Supervisor:** Prof. Sugata Gangopadhyay, Head of CSE Department, IIT Roorkee.
- **Description:** Implemented the Quantum Fourier Transform in Qiskit and studied the effect of QFT on the entanglement of 3 qubit quantum systems. We studied the transpiled circuits of QFT on real quantum device and verified the complexity of gates in QFT circuit for transpiled circuits.

Musical Fountain (March 2019)
- **Campus Group:** Models and Robotics Section (MaRS, IIT Roorkee)
- **Description:** The water fountain was controlled by an Arduino programmed according to the beats of input music. The data of beats was extracted on Audacity software and processed. The LED patterns and motor rotations for nozzles were programmed according to the data of beats.

Events

- **Digital India Week 2022 (4 July 2022 - 8 July 2022)**

I was one of the delegates from C-DAC Hyderabad for representing QSim at the Digital Mela and interacting with Hon'ble PM of India, Shri. Narendra Modi, for sharing the experience of how QSim can impact research in Quantum Computing. The event marked the 7th anniversary of the Digitial India Week initiative.

Extra Courses

- Deep Learning Specialization, Coursera (DeepLearning.AI) (Nov. 2020)
- Programming a Quantum Computer with Qiskit, Coursera (Dec. 2020)
- Introduction to Quantum Computing Course, QUBITxQUBIT sponsored by IBM Quantum (Oct. 2020 - May 2021)
- Fundamentals of Deep Learning, NVIDIA DLI (November 2021)
- Womanium Global Quantum Computing and Entrepreneurship Program - QSilver Qiskit (July 2022 - August 2022)
- Womanium Global Quantum Computing and Entrepreneurship Program - QBronze Qiskit (July 2022 - August 2022)

Achievements and Extra-Curricular Activities

Qiskit Global Summer School on Quantum Simulations (July 2022)

- Completed all the exercises and demonstrated applied understanding and comfort with and about Quantum Chemistry simulations using Qiskit..

Intermediate Level Badge, IBM Quantum Challenge - Fall 2020 (Dec 2020)

- Implementation and designing a quantum game solver using Grover's algorithm. Badge

Quantum Winter Hackathon 2020, BosonQ Psi (Dec 2020)

- "Certificate of Recognition" in Quantum Winter Hackathon 2020 organized by BosonQ Psi, Quantum Computing India, International Society of Computational Fluid Dynamics and IBM Quantum.

Qiskit Challenge India, IBM Quantum (Sep 2020)

- "Certificate of Proficiency" in Qiskit Challenge India , demonstrating understanding and proficiency in classical machine learning and quantum variational classifier algorithms.

Srishti 2019, Models and Robotics Section(MaRS) (March 2019)

- "Best Execution Award" for the project "Musical Fountain".

Volunteer, National Social Service Scheme, IITR (Aug 2018 - April 2019)

- Worked in Pragati Cell, which plays a pivotal role in bringing about awareness and positive transformation in villages and plans various drives. Worked as a volunteer in INDUS ACTION, a non-profit organization working as link between law and the underprivileged children for enrolling them in high quality private schools.

Languages

English, Hindi, Marathi (Marāṭhī)

Skills

Python, MATLAB, IBM Qiskit, QIBO, Pennylane, LaTeX, Excel

Links

LinkedIn : LinkedIn Profile

GitHub : GitHub Profile

Transcripts and Certificates: Documents