Introduction

In the dynamic landscape of 2023, the Quantum Hackathon emerges as a beacon of innovation, where quantum computing takes center stage. This cutting-edge technology leverages the fascinating principles of quantum mechanics to tackle challenges that were previously deemed insurmountable by classical computers. Quantum computing's applications span a multitude of fields, from the forefront of Machine Learning, Circuit design, Computer Vision, and even the creative spheres of Music composition. Join us in this exciting quantum journey, where the limits of what's possible are continually redefined.

Qiskit Fall Fest 2023

The Quiskit Fall Fest, a global initiative, is a series of quantum computing gatherings hosted on university campuses worldwide during the autumn season. Each event is entirely student-driven, with unwavering support from the dedicated IBM Quantum team. In the lead-up to these events, student leaders collaborate closely with IBM Quantum experts during the month of September to craft and organize their unique gatherings, which are then brought to life in October. These gatherings encompass a diverse range of activities, from technical hackathons to inclusive challenges tailored for beginners, all aimed at fostering the growth of quantum skills within local communities.

This year proudly marks the third annual Qiskit Fall Fest. An impressive milestone has been achieved, with over 15,000 students gaining hands-on experience with actual quantum computers through various Qiskit student events conducted over the past three years. In the 2023 event, we witnessed the collective efforts of more than 100 student organizers who orchestrated the festivities across 34 distinct locations, all primed to deliver a truly extraordinary experience.

CIT Quantum Challenge

We had the honor of hosting the CIT Quantum Challenge 2023, as part of the prestigious Qiskit Fall Fest event, generously sponsored by IBM Quantum, for the third time in and around the Coimbatore region. Under the guidance of Dr. S. Manjula Gandhi and our dedicated team of student coordinators, we successfully orchestrated a knowledge-rich event. Brian Ingmanson, the Education Engagement Lead at IBM Quantum, provided invaluable support throughout the event.

This two-week event was divided into distinct phases. The first week featured a series of offline sessions led by 12 expert speakers. These sessions covered a wide spectrum of topics, ranging from the fundamentals of quantum states and qubits to advanced subjects like Quantum algorithms. All session-related updates were made available on our Discord channel for participants to stay updated. This event became a quantum journey, where industry experts and students came together to share their knowledge, enriching the experience for all.

A notable highlight of the event was its inclusivity, as even individuals with no prior knowledge of quantum computing found it accessible and engaging. All challenges are also accessible on our discord channel, "CIT Quantum Challenge" providing a valuable resource for participants. The core challenge for participants was to solve those using Qiskit, the open-source quantum computing software development kit based on Python.
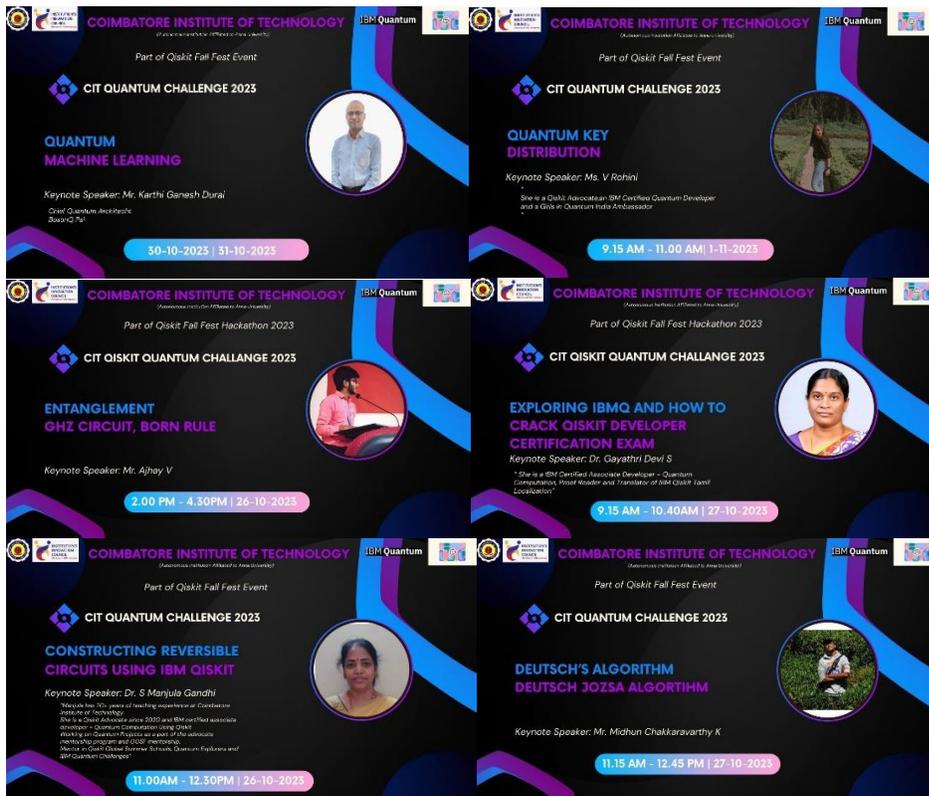
Following the sessions, we launched the challenge online that garnered nearly 50 registrations. The challenge was designed with multiple phases and checkpoints, allowing participants to interact with mentors for guidance or clarifications. Some of the intriguing titles included:
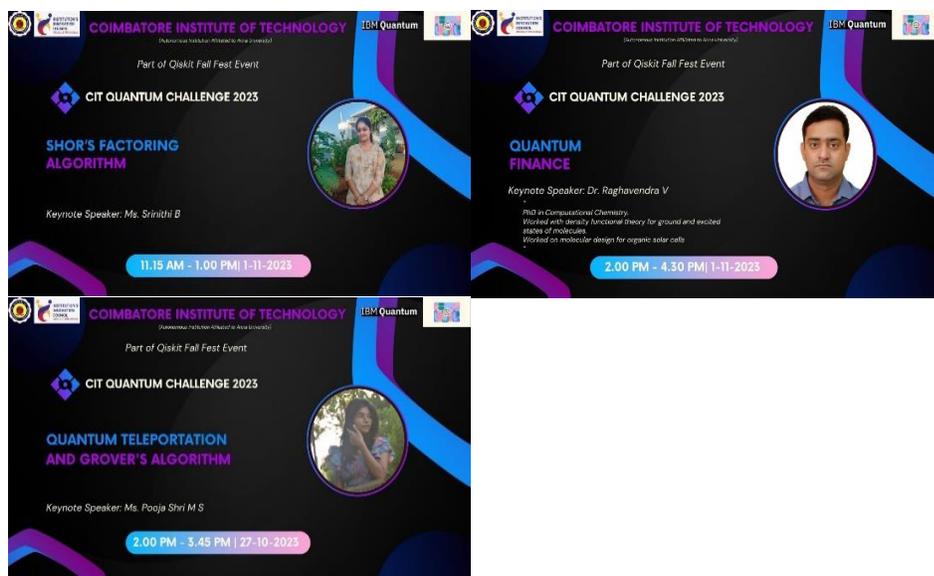
- Single and Multi-qubit gates

- Entanglement

- Quantum circuits

This event truly exemplified the spirit of exploration and collaboration in the fascinating realm of quantum computing.

All the participants are provided with participation certificates and the winners are reported to the IBM Quantum on behalf of our location and they will receive prizes from IBM Quantum.

Posters for the speakers

Certificate Sample

CIT Quantum Challenge 2023

Overall Support

- Dr. S. Manjula Gandhi, Associate Professor, Department of Computing

- Dr. S. Gayathri Devi, Assistant Professor, Department of Computing

- Mr. Brian Ingmanson, Education Engagement Lead at IBM Quantum

- Ms. Serena Godwin, Education Engagement Lead at IBM Quantum

Overall Student Coordinators

- Mr. Mohamed Simar M, M.Sc. Software Systems(9th Semester)
- Ms. Chethana S, M.Sc. Software Systems(9th Semester)
- Ms. Kamala PL, M.Sc. Software Systems(9th Semester)
- Ms. Ahalya R, M.Sc. Software Systems(9th Semester)
- Ms. Varshaa A, M.Sc. Software Systems(9th Semester)
- Ms. Akshaya D A, M.Sc. Software Systems(9th Semester)
- Mr. Ramanan S K, M.Sc. Software Systems(9th Semester)

CIT QUANTUM CHALLENGE 2023 - Schedule

DATE	AN/FN	SPEAKER	TOPIC
26-10-2023	9:30 – 10:00	Inaugural	
	10:15 - 1.00 PM	Dr. S Manjula Gandhi	Constructing Reversible Circuits using IBM Qiskit
	AN 2:00 - 4:30	Mr. Ajhay V	Working with Quantum Entanglement
27-10-2023	FN 9.15 - 10.45	Dr. S Gayathri Devi	Exploring IBMQ and How to crack Qiskit Developer Certification Exam
	11.15 - 12.45	Mr. K Midhun Chakkaravarthy	Deutsch's Algorithm, Deutsch Jozsa
	AN 2:00 - 4:45	Ms. M S Pooja Shri	QuantumTeleportation, Grover's Algorithm
30-10-2023	FN & AN	Mr. Karthickganesh Durai	Quantum Machine Learning
31-10-2023	FN & AN	Mr. Karthickganesh Durai	Quantum Machine Learning
01-11-2023	FN	Ms. V Rohini	Quantum Key Distribution
		Ms. B Srinithi	Shor's Factoring Algorithm
	AN	Dr. Raghavendra	Quantum Finance

Speakers

- Dr. S. Manjula Gandhi, Associate professor, CIT, IBM Qiskit Advocate & IBM Certified Associate Developer
- Dr. S. Gayathri Devi, Assistant professor, CIT, IBM Qiskit Advocate & IBM Certified Associate Developer

- Mr. Karthi Ganesh Durai, Chief Quantum Architect, BosonQ Psi
- Dr. Raghavendra V, Ph.D., Computational Chemistry, Quantum Researcher
- Ms. V. Rohini, IBM Qiskit Advocate, IBM Certified Associate Developer
- Mr. V. Ajhay, M.Sc. Software Systems Student, Coimbatore Institute of Technology
- Mr. Midhun Chakkaravarthy, M.Sc. Software Systems Student, Coimbatore Institute of Technology
- Mr. M. S. Pooja Shri, M.Sc. Software Systems Student, Coimbatore Institute of Technology
- Mr. B. Srinithi, M.Sc. Software Systems Student, Coimbatore Institute of Technology