

Utkarsh Singh^(He/Him)

PhD Candidate / IBM Certified Quantum Developer / Qiskit Advocate

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Education

- Present **Ph.D. Candidate**, Faculty of Science, Department of Physics, University of Ottawa, Ottawa, Canada.
- Present **Visiting Research Student**, National Research Council Canada, Ottawa, Canada.
- 01/25-04/25 **Visiting Graduate Researcher**, Universitat Rostock, Rostock, Germany.
- 2019–2020 **Research intern**, Department of Physical Sciences, IISER, Kolkata, India.
- 2017–2019 **M.Sc.**, Department of Physics, Central University of Jharkhand, Ranchi, India .
- 2012–2015 **B.Sc.**, Department of Physics, Patna Science College, Patna, India .

Work

- Ongoing **Recurrent Quantum Feature Maps for Reservoir Computing**
- Ongoing **A resource efficient Quantum kernel** (Patent Granted)
Coherent Feed Forward Quantum Neural Network (Patent Granted | Published)
- 05/21-12/25 **Teaching Assistant (DGDs/Marking/Proctoring/Lab Demonstrator)**, University of Ottawa, Ottawa, Canada.
- 10/22-04/25 **Senior Consultant (Part-Time) - Quantum Machine Learning(WFH)**, G2Q Computing, Milan, Italy.
- 05/22 - 09/22 **Quantum Software Developer (Part-time/WFH)**, Jabroyd PVT LTD, Bangalore, India.
- 2022 **Designed a quantum Game: Oggy and Cockroaches in the Quantum verse**
QCHACK22
- 2022 **Designed a quantum Game: Quantum Maze**
iQuHACK 2022 by MIT
- 2019 **Quantum Simulation of Ionic Systems using Variational Quantum Eigensolver on IBM Quantum Computer**
Prof. P K Panigrahi, Department of Physical Sciences, IISER Kolkata

Skills

- Quantum QISKIT, CIRQ, QUANTUM MACHINE LEARNING (QSVM, QNN, QVC, ETC), QUANTUM CIRCUIT DESIGNING, QUANTUM COMPUTATION, QUANTUM SIMULATION, QUANTUM VARIATIONAL ALGORITHMS
- Programming PYTHON, MATLAB
- Softwares/OS L^AT_EX, MS WORD, MS EXCEL, MS POWERPOINT, WINDOWS, LINUX, MACOS
- Personal CONFIDENT, HARDWORKING, PROBLEM SOLVING, FLEXIBLE AND ADAPTABLE

Research Interests

Quantum Machine Learning and AI
Application of Quantum technology in Space Exploration
Quantum Simulation of Physical Systems
Quantum Algorithms

Scholastic and Curricular Achievements

- 2025 Received **Mitacs GRA & BSI Awards**
- 2024 Received **Student Award** by Deep Tech Canada in partnership with The National Research Council of Canada (NRC) for presenting my work on **A resource Efficient Quantum Kernel** at Quantum Days 2024
- 2023 Received **2023 Inventor Fixed Milestone Awards** from the National Research Council of Canada (NRC)
- 2023-lifetime **Qiskit Advocate**
- 2022-lifetime **IBM Certified Associate Developer - Quantum Computation using Qiskit v0.2X**
- 2022- lifetime **Certificate of Quantum Excellence in Quantum Simulation** By IBM
- 2021- lifetime **Certificate of Quantum Excellence in Quantum Machine Learning** By IBM
- 2021- lifetime **QBronze - Diploma in Quantum Computing** By QWorld
- 2021- lifetime **QSilver - Diploma in Quantum Programming** By QWorld
- 2022 **IBM Quantum Fall Challenge 2022, Achievement - Advanced Badge**
- 2022 **IBM Quantum Spring Challenge 2022, Achievement - Advanced Badge**
- 2021 **IBM Quantum Challenge Fall 2021, Achievement - Advanced Badge**
- 2021 **IBM Quantum Challenge Africa 2021, Achievement - Advanced Badge**
Problem solved : 3/3 and Solved 3rd (advanced) problem with a score of 102 (one of the best score)
- 2021 **IBM Quantum Challenge 2021, Achievement - Advanced Badge**
Problem solved : 5/5 and Got 1st Best Score in 5th problem (score - 3)
- 2012-2015 Recipient of the prestigious **INSPIRE** (Innovation in Science Pursuit for Inspired Research) scholarship for higher education, awarded by DST, Government of India
- 2008-2012 Recipient of **NMMSS-NTSE** scholarship, awarded by Govt. of India

Other Experiences

- May 2024 Gave a talk on **Quantum Machine Learning** at the uOttawa-NRC joint Theory Fest 2024
- Feb 2024 Presented a poster at the Quantum Days 2024 showcasing my research on **A Resource Efficient Quantum Kerne**
- Sep 2023 Presented a poster at the NRC-uOttawa Joint Annual Symposium showcasing my research on **Coherent Feed Forward Quantum Neural Network**
- Jul 2021 Attended the "2021 Qiskit Global Summer School on Quantum machine Learning"
- Jun 2021 Attended the "QWorld Quantum Summer School 2021"
- 2021 **Participated in QHACK by Xanadu**
Quantum Machine Learning Hackathon | Problem solved : 3/5
- Apr 2021 Attended the "Sixth International Conference for Young Quantum Information Scientists"

Jan 2020 Attended one week long "Indo-Japan Joint Workshop on Quantum Computing and Quantum Information" at ISI Kolkata

Jun 2019 Attended summer school on "Quantum Information and Quantum Technology (QIQT)" at IISER Kolkata

2018-2020 Subject Matter Expert (Physics) at Chegg India Pvt Ltd.

2015-2017 Founded an E-commerce firm

Languages

English Fluent

Hindi Fluent