Monit Sharma

Blogs| Website
monitsharma437@gmail.com | +91-780-781-1970

EDUCATION

IISER-M
MS in Physics and Data Science
May 2022 | Mohali, IND

IISER-M
BS in Physics
May 2020 | Mohali, IND
Indian Institute of Science Education and Research

LINKS

Github:// **monitsharma**
LinkedIn:// **monitsharma**
Google Scholar:// **Monit Sharma**
YouTube:// **MonitSharma**
Twitter:// **@_MonitSharma**
LeetCode:// **MonitSharma**

COURSEWORK

GRADUATE

Quantum Computation and Quantum Information
Particle Physics
Advanced Quantum Physics
Condensed Matter Physics
Maths Method I, II, and III
Data Science
Machine Learning

UNDERGRADUATE

Atomic Physics
Computational Physics I and II
Modeling Complex Systems
Group Theory and Linear Algebra
Elementary Differential Algebra and Geometry

SKILLS

PROGRAMMING

• Python • Java • R • Javascript • Matlab • Julia • C/C++ • CSS/HTML • Mathematica

Quantum Computing Framework:
Qiskit • Cirq • PennyLane • TensorFlow Quantum • Quantinuum • QuTiP • AWS Bracket • DWAVE • Tensorly-Quantum • Cudaq

EXPERIENCE

SINGAPORE MANAGEMENT UNIVERSITY Research Engineer
Apr 2023 - | Singapore

- Working on problems specific to quantum optimization, like problems in supply chain and finance, partnered with IBM Quantum.
- Presented the paper at QIP 2024 Taipei, solving NP-hard newsvendor problem using Quantum-Enhanced Simulation-Based Optimization.

TATA CONSULTANCY SERVICES Research and Development
Oct 2021 - Jun 2022 | Mumbai, IND

- Solved the logistics Vehicle Routing Problem for an enormous 200 customers with 25 vehicles on DWAVE's quantum annealer hardware using a quantum algorithm.
- Supervised an intern and wrote a paper on the "Quantum Powered Employee Transport and Agri-Logistics Optimization" topic.
- Solved the supply-chain problem and devised a new method to reduce the requirements of qubits while solving MILP

IISER-M | Master's Thesis Student
Aug 2021 – May 2022 | Mohali, IND

- Worked with Dr.Satyajit Jena exploring areas of High Energy Physics ∩ Quantum Computing
- Implemented a Quantum Neural Network from scratch and ran on actual quantum hardware using fewer qubits than the number of variables.
- Demonstrated the utility of using the Data Re-uploading method that shows better accuracy with one qubit than previous algorithms that require at least three qubits.

RESEARCH

CERN | Open Lab Student
Jun 2020 – Aug 2020 | Remote , Online

- Worked on Quantum Generative adversarial network and its implementation in High Energy Physics, using it to load the data onto a quantum circuit efficiently.
- Showed that the data loading scheme only requires a polynomial number of gates compared to exponential and used that in optimization problems.

AWARDS & CONFERENCE

2024	QIP	Conference Poster Presentation
2023	99.4 percentile	Common Admission Test
2022		Merit cum Means Fellow
2022	96.4 percentile	Common Admission Test
2022	top 330/17499	Graduate Aptitude Test in Engineering, PHYSICS

PUBLICATIONS

[1] Y. Jin, M. Sharma, H. C. Lau, and R. Raymond. Quantum relaxation for solving multiple knapsack problems, 2024.

[2] M. Sharma, H. C. Lau, and R. Raymond. Quantum-enhanced simulation-based optimization for newsvendor problems, 2024.