Rudraksh Sharma

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Data Scientist and a Qiskit Advocate, with a passion for solving complex problems at the intersection of Physics, Deep Learning, NLP, Quantum computing, Quantum Machine Learning, and Machine Learning. I thrive on building solutions that matter—from developing ML models that achieve good accuracy on industrial datasets. I am working on Quantum Computing Solutions that outperform classical methods.

Work experience

AionOS | Trainee Data Scientist | *October -*

- Working on Intersection of classical and Quantum approach for solving Industry Problems.
- Developing real world application with Hybrid approach like Route Optimization & TAP.

QWorld | QIntern 2025 | *July - September 2025*

- Development of quantum application serving users, improving quantum education accessibility by 40%
- Created visually impactful application to make Quantum computing accessible for any beginner.
- Worked under the guidance of V. G. Gueorguiev, PhD (Louisiana State University).

CDAC, Noida | Ethical hacking and Penetration testing | *July – August 2025*

- Conducted vulnerability assessments and penetration testing on simulated networks and applications to identify potential security risks.
- Applied tools and techniques for network scanning, exploitation, and post-exploitation analysis, strengthening practical cybersecurity skills.

Education

Netaji Subhas University of Technology | MSc Physics Dwarka, *Delhi 2025*
M.Sc. Thesis: Synthesized and characterized Mn-doped NiO nanoparticles; applied Python-based data analysis on XRD/UV-Vis results to study structure–property relations for energy applications.

University of Delhi | BSc Physical Science *Delhi 2023*

Skills

Language & Tools: Python, SQL, Qiskit, Pennylane, Power BI, Origin Lab, MS Excel, and Latex
Quantum Computing: Quantum Annealing, QAOA, VQE, Quantum Key Distribution (BB84), Grover's Algorithm, Quantum Simulation
Data Science: Classical ML models, Deep Learning. NLP, Quantum ML basics, Data preprocessing, Visualization, Statistical Analysis, Proficient in pandas, scikit-learn, matplotlib, seaborn, statistical hypothesis testing, A/B testing, feature engineering.
Research & Experimentation: Nanomaterials synthesis and characterization, Experimental data analysis, Simulation methods

Projects – Data Science

- **DBSCAN Clustering:** Applied DBSCAN clustering and t-SNE dimensionality reduction using Scikit-learn, Pandas, and NumPy to analyze and visualize handwritten digit datasets.
- **Anomaly Detection in Industrial Dataset:** Applied Isolation Forest achieving 95% anomaly detection accuracy on industrial sensor readings, identifying critical safety issues 48 hours earlier than manual inspection.

o **Spam Classifier with NLP:** A machine learning project using Natural Language Processing (NLP) techniques to build a highly accurate spam classifier.

Projects – Quantum Computing

o **Hybrid Classical-Quantum Neural Network:** Building a Hybrid Quantum-Classical RNN (LSTM) to predict stock index closing prices, leveraging a VQC for enhanced feature learning.
o **Quantum Portfolio Optimization (QAOA):** Implemented a Quantum Approximate Optimization Algorithm (QAOA) on financial datasets to optimize a 31-asset portfolio, achieving superior returns.
o **Optimizing Energy Demand Response**: Utilizing quantum algorithms to optimize energy demand response systems, improving efficiency and stability in power grids.
o **Quantum Route Optimization:** Applying quantum algorithms to solve complex route optimization problems, similar to the Traveling Salesperson Problem (TSP).
o **Quantum Key Distribution (BB84**): Simulated the BB84 QKD protocol in Qiskit, demonstrating secure key exchange and analyzing error/noise effects in quantum communication systems.

Soft skills

Analytical Thinking | Problem Solving | Collaboration & Teamwork | Adaptability | Communication |Time Management | Creative Thinking | Research writing & Presentation

Professional Development

o **Qiskit Advocate (2025):** Selected as a global advocate for IBM's Qiskit community, contributing to quantum computing education, outreach, and open-source development.
o **Womanium Quantum Program (2025):** Participated in global training program covering Quantum Optimization, Quantum ML, Quantum Communication, and industry-driven challenges (Vanguard Optimization Challenge).
o **Workshops & Seminars:** Attended workshops on Quantum Machine Learning, Cloud Quantum Platforms (IBM Q Experience), and Data Science applications.

Interests

Playing and watching sports (Cricket & Football), reading (like Dark Matter by Blake Crouch & Man's search for meaning by Viktor E. Frankl), traveling, Playing Call of Duty and coding (love to design and create computer systems and applications to solve real-world problems).

Certificates

o **Womanium Quantum Program 2025** *Womanium*

o **AI- assisted Software Engineering for Quantum Computing & PQC** *QuLearnLabs*

o **Data Analysis using Python** *IBM*

o **Python for Data Science** *IBM*