

Suprajit Dewanji

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EDUCATION

Indian Institute of Technology (IIT) Patna

BTech in Engineering Physics

Calcutta Airport English High School

WBBSE (86.5%)

Nov 2022 - May 2026

Patna, India

Apr 2008 - Jun 2019

Kolkata, India

ACCOMPLISHMENTS

- **Ranked** in the top **160** out of more than 1,600 participants globally in **BlueQubit Quantum Hackathon**. – Code
- Ranked in the top **1.3** percent out of more than **1.5** lakhs candidates in JEE Advanced 2022.
- Ranked as top **2** percentile out of more than **1.16** million candidates in JEE Main 2022.

EXPERIENCE

Research Intern, Siemens

- *Development of Quantum-inspired Genetic Algorithms* December 2024 - July 2025
- Developed a novel quantum-inspired genetic algorithm using **Qudits** and **gene-chains** for solving Mixed-integer linear and non-linear programming optimization problems.
- Developed a novel **entanglement-inspired** self-learning operator for hard constraint handling in MILP/MINLP optimization problems.

Research Intern, QIntern

- *Development of Quantum Algorithms for Optimization* July 2025 - August 2025
- Developing a novel quantum algorithm using **QUBO** formulation and **Hybrid** approaches for solving the Capacitated Vehicle Routing Problem.

Contingent Member, Inter-IIT Tech Meet 13.0

- *Part of the Inter-IIT team representing IIT Patna in the problem statement by ISRO* October 2024 - December 2024
- Worked as a research lead in the problem statement on enhancing the sub-pixel resolution of the elemental maps generated by Chandrayan 2's CLASS experiments.

PROJECTS

Simulation of Hydrogen Molecule using VQE – Code

- Developed **variational quantum algorithm** with **Qiskit** to estimate H_2 ground state energy using multiple ansätze on superconducting and **photonic quantum processors**
- Achieved chemical accuracy: Photonic (**99.85%**), RealAmplitudes (**99.86%**), UCCSD (**99.997%**) vs exact (**-1.13727 Hartrees**)

Quantum Cryptographic Communication using BB84 Protocol – Code

- Built BB84 QKD simulator with **50%** basis match accuracy for secure key generation
- Implemented XOR-based one-time pad with BB84 keys (**100%** accuracy when bases aligned)

Elastic Scattering Phase Angle Estimation – Code

- Developed VQE algorithm for short-ranged two-particle elastic scattering phase shifts

n-Coupled Harmonic Oscillator Simulation – Code

- Quantum algorithm for n-coupled oscillators using Classiq SDK
- Mapped system to **weighted graph** via Quantum walk

Quantum Harmonic Oscillator Simulation – Code

- Implemented scalable VQE simulation for multiparticle QHO systems

SKILLS/RELEVANT COURSEWORK

- **Programming/Development Languages:** C/C++, Python, Qiskit, Qmod (Classiq), QuTip
- **Core Courses:** Quantum Mechanics, Python Programming, Cryogenic Engineering, Linear Algebra and Ordinary Differential Equations, Computational Physics, Numerical Techniques, Optics and Lasers, Quantum Mechanics II
- **Professional Skills:** Quantum Computing and Quantum Information, Quantum Machine Learning, Quantum communication protocols, Quantum Chemistry

SOCIETIES/EXTRA-CURRICULAR ACTIVITIES

- Overall Coordinator of **Quantum Technology Club**, IIT Patna.