



## Patents filed since 2023

Explore a diverse portfolio of cutting-edge quantum technologies developed at IISc, ranging from advanced single-photon emitters and quantum random number generators to quantum sensing, secure quantum communication (e.g., higher-dimensional MDI-QKD), and quantum machine learning algorithms. These innovations also span practical applications such as quantum LIDAR, frequency multipliers, and noise-resilient anomaly detection. While rooted in fundamental quantum principles, several patents address real-world hardware integration - including CMOS-compatible substrates and superconducting circuitry. Industry partners are invited to review these ready-to-license or collaborate-on IPs, which bridge the gap between laboratory breakthroughs and commercial quantum systems. Select listings even demonstrate cross-disciplinary advances (e.g., AI-driven collaborative design and medical image pruning), highlighting quantum-inspired or quantum-enhanced solutions for broader industrial challenges

IP Reference Number	IP Title	Faculty Inventor @ IISc
IDR-CeN-2025-172	A single-photon emitter and a method of manufacturing thereof	Akshay Naik
IDR-CeN-2024-138	Method and system for detecting anomalies in sensor data and for denoising sensor data	Ambarish Ghosh
CS-SSCU-2024-030	Colloidal quantum dot single photon emitter	Anshu Pandey
ES-DESE-2025-194	An electronic quantum random number generator (EQRNG) for secure hardware applications.	Arup polley
ES-CSA-2025-001	Method and system for training quantum boltzmann machine (qbm) comprising visible qubits and hidden qubits	Chiranjib Bhattacharyya
ES-ECE-2024-082	A single photon emitter (spe) and a method of fabrication thereof	Kausik Majumdar
ES-ECE-2025-195	A frequency multiplier circuit and a method for generating higher harmonics	
ES-ECE-2023-098	Energy-efficient and fast controlled descent for over-the-air assisted federated learning	Neelesh B Mehta
ES-ECE-2025-012	Method and system higher dimensional measurement device independent quantum key distribution	Varun Raghunathan
ES-EE-2023-076	Method and system for classifying data associated with an object manoeuvre	Rathna G N
MPS-IAP-2024-011	Quantum illumination and estimation of object reflectivity using polarization-entangled photon pairs	Sanjiv Sambandan
MPS-IAP-2023-100	Quantum lidar using polatization-path entangled single photons	
IDR-CDS-2025-201	A method and system for two staged adaptive structured pruning in federated medical image segmentation	Vaanathi Sundaresan