

Publications and Patents

Journals

1. Mondal, S., & Dutta, A. K. (2026). Relative entropy-based training of quantum neural networks. *IEEE Transactions on Quantum Engineering*, vol. 7, pp. 1–14, Art. no. 3100414.
DOI: [10.1109/TQE.2025.3638878](https://doi.org/10.1109/TQE.2025.3638878)
Impact Factor: 4.6
Quartile: Q1.
2. Mondal, S.; Laskar, M. R.; Dutta, A. K. (2021). ML criterion based signal detection of a MIMO-OFDM system using quantum and semi-quantum assisted modified DHA/BBHT search algorithm. *IEEE Transactions on Vehicular Technology*, 70(2): 1688–1698.
DOI: [10.1109/TVT.2021.3055537](https://doi.org/10.1109/TVT.2021.3055537)
Impact Factor: 7.1
Quartile: Q1.
3. Mondal, S., & Dutta, A. K. (2023). A modified least squares-based tomography with density matrix perturbation and linear entropy consideration along with performance analysis. *New Journal of Physics*, 25(8): 083051.
DOI: [10.1088/1367-2630/acf187](https://doi.org/10.1088/1367-2630/acf187)
Impact Factor: 2.8
Quartile: Q1.
4. Mondal, S., & Dutta, A. K. (2023). A Bayesian quantum state tomography along with adaptive frameworks based on linear minimum mean square error criterion. *New Journal of Physics*, 25(12): 123001.
DOI: [10.1088/1367-2630/ad0e49](https://doi.org/10.1088/1367-2630/ad0e49)
Impact Factor: 2.8
Quartile: Q1.
5. Laskar, M. R.; Mondal, S.; Dutta, A. K. (2022). Eigen-spectrum estimation and source detection in a massive sensor array based on quantum assisted Hamiltonian simulation framework. *IEEE Transactions on Communications*, 70(6): 4013–4025.
DOI: [10.1109/TCOMM.2022.3167057](https://doi.org/10.1109/TCOMM.2022.3167057)
Impact Factor: 8.3
Quartile: Q1.
6. Laskar, M. R.; Mondal, S.; Dutta, A. K. (2023). A low-complexity quantum simulation framework for Toeplitz-structured matrix and its application in signal processing. *IEEE Transactions on Quantum Engineering*, 4: 1–23.
DOI: [10.1109/TQE.2023.3271995](https://doi.org/10.1109/TQE.2023.3271995)
Impact Factor: 4.6
Quartile: Q1.

Conferences

- **Mondal, S.; Saravanan, M.; Ghosh, A. (2025).** Quantum-Inspired Learning with Hybrid DPD Cost Function and Robust SVD for Noisy Scenarios. *Proceedings of the 17th International Conference on Communication Systems and Networks (COMSNETS 2025)*, Bengaluru, India, pp. 1102–1107, 2025.
DOI: [10.1109/COMSNETS63942.2025.10885696](https://doi.org/10.1109/COMSNETS63942.2025.10885696)
- **Mondal, S.; Saravanan, M. (2025).** Enhanced Quantum-Inspired Supervised Learning for Telecommunication Networks. *Proceedings of the 2025 Computing, Communications and IoT Applications (ComComAp 2025)*, Madrid, Spain, pp. 42–49, 2025.
DOI: [10.1109/ComComAp68359.2025.11353139](https://doi.org/10.1109/ComComAp68359.2025.11353139)

Patents

1. **Title:** *System and method to characterize an unknown quantum state and obtain physically reliable estimate of the unknown quantum state.*
Inventors: Subhadeep Mondal and Amit Kumar Dutta
Assignee: IIT Kharagpur
Patent Number: 541007
Status: Granted (India)
Link: [Grant Certificate](#)
2. **Title:** *Bayesian Quantum State Tomography System with Adaptive Linear Minimum Mean Square Error Method.*
Inventors: Subhadeep Mondal and Amit Kumar Dutta
Assignee: IIT Kharagpur
Application Number: 202431030098
Status: Published (India)
Publication Date: 24/01/2025
3. **Title:** *Method for Training Quantum Neural Networks in Mixed State with Entropy Based Cost Function.*
Inventors: Subhadeep Mondal and Amit Kumar Dutta
Assignee: IIT Kharagpur
Application Number: 202531023136
Status: Published (India)
Filing Date: February 2025
4. **Technology Transfer — Ericsson**
Title: *Training a Tensor Network to Identify a Handover Candidate for a User Equipment in a Telecommunications Network.*
Inventors: M Saravanan, Subhadeep Mondal, Karthik R M
Assignee: Ericsson India Private Limited
Ericsson Reference / PCT: P111805WO01 (PCT/IN2025/050380)
Status: Filed (March 17, 2025) (Will be published after 18 months of the filing)
5. **Technology Transfer — Ericsson**
Title: *Augmented Quantum Train Framework for Beam Level Mobility Management.*

Inventors: M Saravanan, Subhadeep Mondal, Ahsan Javed Awan

Assignee: Ericsson India Private Limited

Ericsson Reference / PCT: P113500 (PCT/SE2025/050753)

Status: Filed (August 21, 2025) (Will be published after 18 months of the filing)

6. **Industry Patent Title:** *KalmanNet-Based Carrier Phase Recovery for Continuous-Variable Quantum Key Distribution (CV-QKD)*. **Assignee:** Tata Consultancy Services **Patent Application No.:** 202621077479 **Status:** Filed (June 23, 2026)