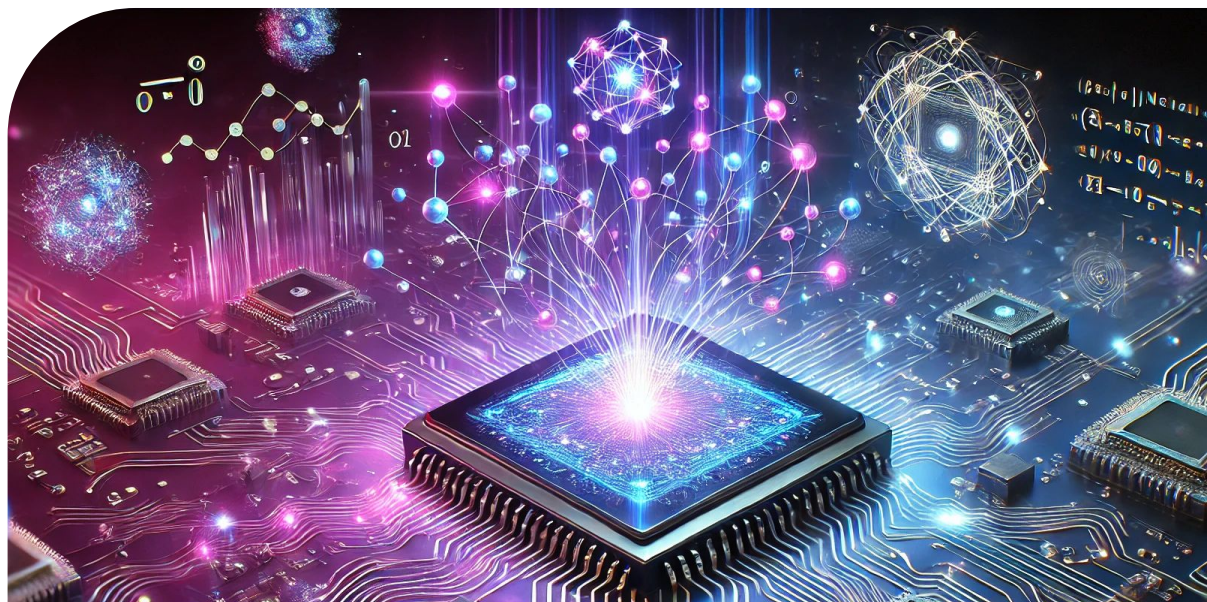# Automated Discovery and Optimization of Quantum Error Correction Codes Using ML

Course: IITM–DA63OO(QML)
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Update

- **Surface Code Integration:** Employed a topological quantum error correction scheme (Surface Code) to detect and localize quantum errors using syndrome bits.

- **RL-Based Correction Strategy:** Trained a Q-learning agent over 10,000 episodes to learn optimal error correction actions based on syndrome patterns.

- **Accuracy:** The RL agent achieved 84.30% accuracy, outperforming the baseline method (77.31%) — a 6.99% improvement.

Cont…

Baseline Accuracy vs RL Agent