Thirumalai M

Roll No.:M23IQT008
Quantum Technologies
Quantum Computing
Indian Institute Of Technology, Jodhpur

+91-9043215097
er.mthirumalai@email.com
m23iqt008@iitj.ac.in
Github | Website
Linkedin

Education

- **Indian Institute of Technology** — Jodhpur, India
  Master of Technology, Quantum Technologies — *July 2023 - June 2025*
  Courses: Quantum Information and Computation, Machine Learning, Quantum Machine Learning, Classical and Quantum Algorithms, Quantum Inspired Optimization, Open Quantum Systems
- **KCG College of Technology** — Chennai, India
  Bachelor of Engineering, Electrical and Electronics Engineering — *Aug 2014 - May 2018*
  Courses: Object-oriented programming, Digital Logic circuits, Computer programming.

Skills Summary

- **Programming Languages**: Python, C/C++, SQL
- **Machine learning libraries**: Scikit, TensorFlow, Pytorch, Keras, numpy, pandas,etc,.
- **Quantum computing tools** : Qiskit, Pennylane, D-Wave leap, Strawberry Fields, QuTip.
- **Other Tools**: VS Code, Eclipse, GIT, MySQL Workbench

Experience

- **Amazon** — Chennai
  Automation Analyst - Automation Team,CMT — *April 2021 – July 2023*
  - **Project Course - EU Hardlines**:
    - Automated domain operations by analyzing metrics, updated configuration bugs based on layout of sites.
    - Developed and optimized code scripts, performed web scraping, and enhanced system performance through automation and issue resolution.
    - Led process improvements, conducted deep dives on metrics, and mentored team members to ensure efficient adaptation to business needs.
  - **Impact**: Collaborated with the team to automate hundreds of scripts tailored to business needs across the EU region, significantly reducing manual effort, optimizing resource utilization, and generating substantial revenue for the company.
- **Amazon** — Chennai
  Associate - Retail Process, CMT — *July 2019 – March 2021*
  - **Project Course - NA Hardlines**: Enhanced the accuracy of pricing analytics and operations by auditing, tracking, and collaborating across teams to optimize processes, systems, and performance metrics, aligning with Amazon's core values.
  - **Impact**: Contributed to significant revenue growth during major sales periods by auditing and optimizing pricing analytics and operations.

Projects

- **Classification of quantum circuit into genuinly entangled, bi-seperable and product states using quantum neural networks**: (Work in progress) Generated entangled states with noise channels as datasets and encoded, trained then classified them using a Quantum Neural Network with customized Ansatz for optimal accuracy.
- **VQC implementation using EstimatorQNN**: Developed and optimized Variational Quantum Classifiers (VQC) and custom Ansatz designs using Estimator QNNs to enhance classification accuracy and computational efficiency. Find project report here.
- **Dynamic circuit based quantum teleportation-IBM QRise Challenge**: Designed a quantum teleportation circuit using dynamic circuits with linear long-range entanglement to reduce circuit depth - find project report here.
- **Automated Medical Image Diagnostics using QML**: Applied hybrid classical-quantum network using transfer learning to an image classification problem and compared results with classical ML technique. Find project report here.
- **Automation projects - Amazon | Xpath, Regex, SQL**: Worked on image search and match configurations, maintenance, benchmarking projects to improve business efficiency and accuracy.
- **Power Factor Improvement in KCG College** : Developed a prototype which demonstrates power factor improvement using Capacitors, Relay switches and Arduino, and as real-time analysis, estimated load balance in my UG college and suggested capacitance based power factor correction. Find project report here.

Publications

- **Paper: From Static to Dynamic: Implementation of Long-Range Entanglement GHZ States for Dynamic Circuit-Based Quantum Teleportation)**: Paper got accepted and presented at IEEE CONEECT 2024, IISc Bangalore yet to be published. Find certificate here.

Rewards and Recognition

- Find my recognition in quantum tech field here.
- Stellar award and Star of the month - During my tenure at Amazon.
- Breaking the barrier award at college day, 2018 and other achievements during my UG found here.