Skype id : live:.cid.311721e674329e6f
Google scholar: https://scholar.google.com/citations?user=_kAPnjgAAAAJ&hl=en
Phone no. : (+353) 833752160
Email : viv281997@gmail.com, vasanv@tcd.ie
Linkedin : https://www.linkedin.com/in/vivek-vasan-b3b420198/

VIVEK VASAN

PhD Researcher - Trinity College Dublin

Research Interests-

- My Research interests lie at the intersection of Computer Science, Quantum Information, Quantum Physics, Optics and Network Science. I am interested in Telecommunication using quantum light, studying how the quantum phenomenon affects the network behavior and properties and developing algorithms/protocols for Quantum Internet.

Academic Qualifications-

- **Trinity College Dublin** — Dublin, Ireland
  PhD Computer Science — 2023 - Present
  Science Foundation Ireland Fellowship Recipient
  Advisors: Marco Ruffini and Dan Kilper
  Research Area: My work focuses on developing a framework to enable coexistence of Classical and Quantum channels over the existing infrastructure of optical networks that is already in place for classical telecommunications networks. This work is carried out as a part of a joint project funded by NSF and SFI involving research groups from the US (CQN affiliated institutions) and Ireland (CONNECT affiliated institutions)

- **Indian Institute of Technology** — Kharagpur, India
  M.Sc. Physics — 2019 - 2021
  Advisor: Sonjoy Majumdar
  Thesis: Molecular simulation using Variational Quantum Eigensolver

- **SRM Institute of Science and Technology** — Chennai, India
  BSc Physics — 2015-2018

Technical Skills-

- **Tools** : Python , Virtual Machine (VMware Fusion), Sql, AWS (lambda, s3, dynamo db, EC2)
- **Frameworks and Libraries** : Pandas, Scikit-learn, NumPy, Matplotlib, Sci-py, Flask, Twisted, Autobahn, Qiskit, Qutip
- **Applied mathematics** : Probability theory, Stochastic processes, Bayesian Inference, Numerical methods, Linear Algebra, Statistics.

Professional Experience -

Quantsapp Pvt. Ltd. | Aug 2021 - Apr 2022

Designation: Python Developer

- Created backend API for determining the FnO positions traders are making in Futures and Option stocks using Open interest data by querying live data of open interest, closing price etc from Redis database and doing processing with NumPy and Pandas.
- Database migration of existing API's that were fetching data from AWS s3 to Redis database
- Created a bridge websocket server using a predefined class provided by Autobahn and Twisted to forward the client request to the host, monitoring the number of requests sent by the UI for each utility, number of new active connections established and server response time.
- Created a file synchronization process between multiple servers using flask and google drive API
- created an API for scraping and cleaning data using PyMuPDF from mutual fund holdings/portfolio documents of an individual and displaying various data such as graph indicating portfolio valuation over time, individual breakdown of percentage share of each mutual fund etc.

Research Experience-

PhD Research|Trinity College Dublin

Quantum Networks

- Worked on loss model and node architecture for Quantum discord based entanglement distribution and direct entanglement distribution in Quantum optical networks.
- Formulated an IP-network–based control protocol to oversee and authenticate entangled-photon pairs in quantum memories, ensuring only those forming an entangled pair and exceeding fidelity thresholds are allocated for quantum network applications such as quantum teleportation and QKD. Simulated the protocol on a Dublin metro-area fibre network model and applied Lindblad-formalism analyses to quantify its impact on entanglement rate and fidelity and to benchmark candidate quantum-memory platforms.

MSc. Research|IIT Kharagpur

Molecular simulation using variational quantum eigensolver

- Used IBM's Qiskit SDK to implement VQE -
- Mapped the electronic hamiltonian of the system to native architecture of quantum device using jordan wigner mapping
- Prepared the ansatz/trial wavefunction using different variational forms like UCCSD with the given Hartree Fock initial state. Optimized the variational parameter for minimum energy configuration

Teaching Experience -

Trinity College Dublin, School of Computer Science and Statistics

Tutorials

- "*Introduction to Statistics I* " , Fall 2023, 2024
- *"Multivariate linear analysis",* Fall 2023
- "*Mathematics II*", Spring 2025
- "*Linear Regression*", Spring 2025