Anubhav Srivastava

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Education

- **Indian Institute of Technology Hyderabad** — Hyderabad, India
  M.Tech - Computer Science and Engineering; GPA: 8.92 — *January 2021 - ongoing*

- **College of Engineering Roorkee** — Roorkee, India
  B.Tech - Computer Science and Engineering; Percentange: 74.14% — *August 2013 - July 2017*

Research Experience

- **IIT Hyderabad** — Hyderabad
  Research Assistant (working with Dr. M.V. Panduranga Rao) — *Jan 2021 - current*
  - **Routing algorithms for Qauntum Networks**: Path finding algorithms to distribute end to end entanglements between the requesting nodes
  - **Quantum Network Simulator**: Modified an existing quantum network simulator called SeQUeNCe and added a functionality of Virtual Links to study their impact on average latency and fidelity
  - **Request scheduling in quantum networks**: Request scheduling algorithms to maximize the number of demands completed and number of entanglements served
  - **Solving Vehicle Routing Problem using adiabetic quantum computing**: Formulation of QUBO for different variants of the Vehicle Routing Problem and solving these on Dwave's quantum computer

- **Qulabs India Pvt. Ltd.** — Hyderabad
  Research Intern (in collaboration with IIT Hyderabad) — *Jun 2021 - Aug 2021*
  - **Quantum Network Simulator**: Extended upon the virtual link functionality and helped with the implementation of greedy routing strategies in the simulator

Publications

- Anoop Pandey, Anubhav Srivastava, Shuhul Handoo, T. Bheemarjuna Reddy and M. V. Panduranga Rao. **Greedy Algorithms for Finding Entanglement Swap Paths in Quantum Networks**. Submitted to International Conference on Distributed Computing and Networking (ICDCN) 2023 (under review)

- Surya Sai Teja Desu, Anubhav Srivastava and M. V. Panduranga Rao. **Model checking for entanglement swapping**. Accepted at International Conference on Formal Modeling and Analysis of Timed Systems (FORMATS) 2022

- Anubhav Srivastava, Devendra Mishra, Madhuri Annavazzala, Antony Franklin, Nixon Patel, M.V. Panduranga Rao. **Short-cuts on quantum network simulators**. Accepted at IEEE International Conference on Advanced Networks and Telecommunications Systems (ANTS) 2021

- B. Anvesh, ABS Phaneendra, M. Sai Anuraag, J. Sai Nishith, K. Dhanush, Anubhav Srivastava, Devendra Mishra, Antony Franklin, Nixon Patel, M. V. Panduranga Rao. **Analyzing Quantum Network Routing Protocols through Time-Driven Simulations**. Accepted at IEEE International Conference on Advanced Networks and Telecommunications Systems (ANTS) 2021

Projects

- **Handovers in 5G networks using Reinforcement Learning**: We used ns3 to simulate the handover mechanism between base stations. We replaced the handover logic by an RL agent that tries to maximise the Recieved signal power at the user equipment

- **Secure Chat Application**: Used the concepts of public key cryptography to issue and sign certificates. We simulated different kinds of active and passive attacks on multiple python clients that authenticate themselves using these certificates

- **Photon Number Splitting attacks on Quantum Networks**: Modified a quantum network simulator called SimulaQron to simulate light pulse and photons. Experimented with PNS attacks on this setup.

Work Experience

- **Newt Global Future Ventures Pvt. Ltd.** Gurgaon
  Software Engineer (Java Developer) *Mar 2019 - May 2020*
  - **Real-Time cab booking (SpotHire)**: Designed and developed the cab booking and passenger pairing (shared cab) services
  - **Commercial Analytics**: Developed a unified interface for real-time computation and visualization of major data points as per user requirements
  - **Impact**: Resolved multiple blocker issues and ensured high system availability for which I was given Employee of the month for July 2019
- **Newgen Software Technologies Pvt. Ltd.** Noida
  Software Engineer (Full-Stack Developer) *Aug 2017 - Dec 2018*
  - **Reporting System**: Developed report generation modules using SQL procedures
  - **Java Utilities**: Created utilities for integration of client systems and the core product

Skills Summary

- **Languages**: Python, C, C++, JAVA, Bash
- **Libraries**: Qiskit, SimulaQron, QuNetSim, SeQUeNCe, ns3
- **Tools**: Git, make, maven, MySQL