Shahrooz Pouryousef

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Legal Status

- **U.S. Permanent Resident**

Research interests

Applying machine learning techniques to quantum networking and Quantum error correction problems.

Education

UMass Amherst **Aug. 2020 – Present**
Ph.D Candidate in Computer Science

UMass Amherst **Aug. 2017 – Aug. 2020**
Master Degree in Computer Science

Sharif University of Technology **Sep. 2013 – Aug. 2015**
Master Degree in Computer Engineering

Research Experience

Cisco Quantum lab **March. 2023 - September 2023**

- Analysis and simulation of Fault-Tolerant Distributed Quantum Computing
- Formulating quantum network planning as an optimization problem
- Formal analysis and evaluation of different protocols for quantum repeater chains

ACQUIRE (Quantum networks research lab) **September. 2021 - Present**

- A fast and scalable neural-network based quantum error correction architecture
- Design, formal analysis, and evaluation of Quantum Overlay Networks (QONs).
- Design, formal analysis, and evaluation of Quantum Virtual Private Networks (QVPNs).
- Design and implementation of a distributed algorithm for Quantum Network Utility Maximization (QNUM)

Advanced Networked Systems Research lab **Aug. 2017 - Aug. 2021**

- Design and implementation of a logically centralized architecture for interdomain routing
- Implementation of a reinforcement learning system for traffic engineering in Intradomain routing for ISPs

Calipr research group **Aug. 2017 - Dec 2019**

- Developing an open source framework which conducts longitudinal Internet-scale measurements to identify when popular domains are victims of typosquatting

Publications

- **Shahrooz Pouryousef**, Hassan Shapourian, Alireza Shabani, and Don Towsley. "Quantum Network Planning for Utility Maximization." In Proceedings of the 1st Workshop on Quantum Networks and Distributed Quantum Computing, pp. 13-18. 2023.

- **Shahrooz. Pouryousef**, Nitish K. Panigrahy , and Don Towsley . "A Quantum Overlay Network for Efficient Entanglement Distribution, IEEE INFOCOM 2023.

- Chehimi, Mahdi, **Shahrooz Pouryousef**, Nitish K. Panigrahy, Don Towsley, and Walid Saad. "Scaling Limits of Quantum Repeater Networks." arXiv preprint arXiv:2305.08696 (2023).

- **Shahrooz. Pouryousef**, Nitish K. Panigrahy, Monimoy Deb Purkayastha, Sabyasachi Mukhopadhyay, Gert Grammel, Dominoko Di Mola, and Don Towsley. "Resource Management in Quantum Virtual Private Networks." arXiv preprint arXiv:2305.03231 (2023).

- **Shahrooz. Pouryousef**, Lixin Gao, and Arun Venkataramani . "Towards Logically Centralized Interdomain Routing", 17th USENIX Symposium on Networked Systems Design and Implementation (NSDI '20 Fall), 2020.

- **Shahrooz. Pouryousef**, Lixin Gao, and Don Towsley. "Robust Path Selection in Software-defined WANs using Deep Reinforcement Learning." arXiv preprint arXiv:2212.11155 (2022).

- **Shahrooz. Pouryousef**, Muhammad Daniyal Dar, Suleman Ahmad, Phillipa Gill, and Rishab Nithyanand . " Extortion or Expansion? An investigation into the costs and consequences of ICANN's

gTLD experiments", Passive and Active Measurement Conference, Measurement tools and Network security and privacy track, 2020.

Gao, Z., Sepahi, A., **Shahrooz. Pouryousef**, Zhou, L., & Zhu, H. (2022, May). Tradeoff between Privacy and Utility for Location-based Recommendation Services. In ICC 2022-IEEE International Conference on Communications (pp. 4396-4401). IEEE.

Teaching Experience

- First-year undergrad seminar on exploring modern computing. Fall. 2023
- Teaching Assistant CS453 Computer Networks course. Spring 2023

Outreach & Service

- Reviewer for IEEE Transactions on Networking (ToN) journal and ICC conference.
- CQN SLC industry officer: Organizing events to foster a sense of community in the center for quantum networks (CQN) 2023-2024
- CICS Graduate students representative 2022-2023
- A member of UMASS CICS social committee (for two semesters) 2019-2020
- A member of the graduate students committee that interviews faculty candidates that the department may hire (for three semesters) 2021-2022
- A member of PhD Applicants Support Program (PASP) committe that helps Ph.D. applicants from underrepresented minority groups to improve their PhD application materials 2021-2023