TIMUR JAVID

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Education

University of Illinois Urbana-Champaign (UIUC)

Doctor of Philosophy in Electrical and Computer Engineering Master of Computer Science (5-year BS/MCS) Bachelor of Science in Computer Science

Skills and Interests

Languages: Python \bullet C \bullet C++ \bullet JavaScript/TypeScript \bullet Java \bullet MySQL \bullet Haskell \bullet Rust Tools & Packages: SciPy • NumPy • MongoDB • InfluxDB • Git • Qiskit • React • Redux • Carbon • LaTeX Hobbies: Hiking & Backpacking • Photography • Cooking (esp. Neapolitan Pizza)

Experience

Kwiat Quantum Information Group at UIUC

Graduate Research Assistant

- Integrated OpenCV detection and multi-threaded C++ code with PID control to improve drone-to-drone locking for quantum key distribution, decreasing average quantum channel loss during flight from 20.6 dB to 9.68 dB.
- Designed and implemented firmware on an STM32 micro-controller for entanglement source experiment to be tested on the International Space Station, in collaboration with the Laboratory for Advanced Space Systems at Illinois.
- Implementing device control of an Elliptec optical rotation mount by integrating it with Pennylane for research on experimental variational quantum optimization of polarization qubits for mitigating fiber noise.
- Engineering an open-source Python package utilizing SciPy optimization for quantum state and process tomography of optical systems, to be deployed as a public webpage for use by experimentalists.

IBM Research

Quantum Researcher Intern, Quantum State Transfer Systems

- Produced an experimental quantum optical set-up for ancilla-assisted quantum process tomography with spontaneous parametric downconversion (SPDC) waveguides and superconducting nanowire single photon detectors (SNSPD) in Bluefors dilution refrigerator.
- Cooperated with experimentalists and theorists on analysis of novel quantum state transfer systems.
- Analyzed novel quantum state transfer systems by implementing and executing quantum process tomography protocols, using Qiskit to gather data.
- Hands-on experience with fiber splicing, opto-mechanics, dilution refrigerator bring-up, optical alignment, and set-up and control of SPDC waveguides and SNSPDs.

IBM Research

Quantum Researcher Intern, Quantum Observability

- Incorporated three live data sources from quantum systems monitoring into a backend data pipeline utilizing Apache, Kafka, MQTT, and InfluxDB in Python, enabling observability for IBM Quantum systems.
- Enhanced data logging for existing alerts and notification system with a new data pipeline, bypassing logging to hard disk.
- Analyzed historical data to develop data visualizations with feedback from quantum researchers across teams.
- Constructed a front-end interface with the Carbon/React framework to display live data from quantum systems, linked with our InfluxDB backend.

Amazon Web Services (AWS)

Software Development Engineer Intern, IoT Edge Qualification

- Spearheaded and developed a front-end user interface for an existing hardware qualification tool using React and Redux and a Golang backend within two months.
- Developed a web API in Golang, allowing device tests to be run from HTTP requests and allowing users to obtain results from qualification tests.
- Integrated web API with a React/Redux front-end, providing users a visual representation of device tests, documentation for qualification standards, and feedback for which IoT services their hardware is compatible with.
- Led design meetings for the project, producing design documents and integrating feedback from code reviews and weekly meetings with peers and supervisors.

May 2023 – August 2023

May 2022 – August 2022

May 2020 – August 2020

August 2017 - May 2022

GPA: 3.90

May 2021 - Present

August 2022 – Present