Vaishnavi Iyer

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Education

Purdue University

- Bachelor of Science: Computer Science, Specialization: Machine Intelligence
- Bachelor of Arts: Political Science, Specialization: International Relations
- **Dean's List and Semester Honours:** Fall 2020, Spring 2021, Spring 2022, Fall 2023 ***2020 - 2024***

Skills: Qiskit, Python, PyTorch, Java, JS, C/C++, React, Artificial Intelligence, TensorFlow, Neural Networks, Linear Algebra, Statistics, Scrum, Public Speaking, Conference Organization, Outreach

Experience

Quantum Software Engineering Intern *IBM Quantum* ***May 2023 - Aug. 2023***

- Created a framework for making realistic experimental IBM Quantum backends by analyzing and sampling from the statistics of existing quantum computers. We introduced a framework into the existing Qiskit API, facilitating efficient transpiling and future two-level quantum system forecasting, allowing for 256+ qubit systems to be visualized and tested.

Summer Fellow and Research Assistant: Quantum Machine Learning *SURF 2022* ***May 2022 - Aug. 2022***

- A project where I analyzed the verification of single photon sources through latent variables of spectral broadening**,** using generative models written in Python, PyTorch and TensorFlow, which aims to improve the enforceability of indistinguishability in spectral diffusion and other properties of photons in current fabrication methods.

Publications and Presentations

- Iyer, V; Bezick, M. Wilson, B; Boltasseva, A. **Applications of Variational Neural Annealing for Machine Learning-Assisted Topological Optimization.** Spring Undergraduate Research Conference (2024)
- Wilson, B., Iyer, V., Shalaev, V., Kildishev, A., Kais, S., Boltasseva, A. **Learning Van der Waals Potentials in Surrogate Rydberg Hamiltonians**. 3rd Annual Quantum Summer School (2023)
- Iyer, V., Bonilla Garay, B., Figueroa, M.. (2023, August 11). **A General Framework for generating Realistic Quantum Backends.** Quantum Science at Purdue Poster Session (2023).
- Iyer, V. **Verification of Single Photon Sources through Latent Variables of Spectral Broadening.** Summer Undergraduate Research Fellowship Quantum Technologies Symposium. (2022)
- Iyer, V., Wilson, B., Shalaev, V., Kildishev, A., Kais, S., Boltasseva, A. **Measuring bVAE Reconstruction Loss Against Binary Latent Space Size.** Elmore Center's Quantum Research Poster Session (2022) and the Quantum Science Center's Quantum Summer School (2022).
- Wilson, B., Dickey, E., Iyer, V, & Kais, S.. (2022, June 13). **A Relative Church-Turing-Deutsch Thesis from Special Relativity and Undecidability.** In *arXiv* (arXiv:2206.06419). **https://arxiv.org/abs/2206.06419**

Leadership and Awards

- **Lead Organizer, Qiskit Fall Fest at Purdue** ***November 2023***
  - Led the management and organization of the first Qiskit Fall Fest on Purdue West Lafayette's campus with $3000 raised. Achieved 93% knowledge increase in quantum computing and Qiskit among attendees, from 7%. Featured speakers from IBM, SPEED2ZERO, Qubit X Qubit, and QuEra. Encouraged 50% of attendees to explore future quantum computing opportunities or research endeavors.
- **Vice-President: Hack the Future** ***May 2023 - May 2024***
  - Spearheaded the interaction between local non-profits and our teams for a university club that develops for non-profits. Recruited 4 non-profits, allowing our club size to increase by 25%. Led events with distinguished speakers from Purdue faculty, and encouraged about 70% of our club members to pursue web development in the future.
- **Lead Student Volunteer: Qubit X Qubit, PQSEI, Southport High School** ***April 2024***
  - Spoke at a 2-day introduction to quantum computing to high school students at Southport High School, Indianapolis, where I discussed the basic concepts of quantum computing and its applications in diverse fields like robotics, foreign policy, and environmental engineering.

Affiliations and Certifications

- IBM Certified Associate Qiskit Developer v0.2x and IBM Quantum Challenge with Qiskit 1.0, **IBM**, 2024
- US Quantum Information Science Summer School Alumnus, **Oak Ridge National Laboratory**, 2024
- Quantum Fundamentals, **Q-CTRL**, 2023
- Qubit X Qubit Early Quantum Career Immersion Alumnus: Summer 2023
- Purdue Political Science Research Collaboratory Pilot Alumnus 2021
- Undergraduate Researcher: NanoML, Quantum Science Center (QSC)
- Affiliate: Elmore Family School of Electrical and Computer Engineering and Oak Ridge National Laboratory