Saasha Joshi

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Education

2021-2024 **University of Victoria**, *British Columbia, Canada*
M.Sc. (Thesis) in Computer Science (Quantum Computing)

2017-2021 **Panjab University**, *Chandigarh, India*
B.E. in Computer Science and Engineering

Master Thesis

piQture A CI/CD Quantum ML pipeline for image processing.
Worked with Python, Qiskit, MLflow, Flask, GitHub Actions
Advised by Drs. Hausi Müller and Ulrike Stege

Experience

Industry

May 2023 - Aug 2023 **Quantum Developer Intern**, *IBM Quantum*, Yorktown Heights, New York
Built a wire-cutting feature, an error-mitigation pipeline, and managed documentation for the Circuit-Knitting team.
Relevant GitHub links: Wire-Cutting
Worked with Qiskit, Sphinx, GitHub Actions

May 2022 - Aug 2022 **Quantum Researcher Intern**, *IBM Quantum*, Yorktown Heights, New York
Built software features, benchmarking programs, and maintained open-source software for quantum chemistry applications with the Qiskit Nature team.
Relevant GitHub links: Polynomial-Tensor, Application-Benchmarking, Application-Benchmarking
Worked with Qiskit, airspeed velocity (asv), GitHub Actions

Jan 2021 - June 2021 **Quantum Computing Intern**, *Tech Mahindra Limited*, India (Remote)
Researched and implemented quantum algorithms for industrial applications.
Worked with Qiskit, Zapata Orquestra

Jan 2019, June 2019 - Aug 2019 **Winter and Summer Intern**, *Defence Research and Development Organisation (DRDO)*, New Delhi, India
Researched and implemented ML algorithms for signal processing.
Worked with Python, Tensorflow, OpenCV
Advised by Dr. Sudhabrata Majumder

Academia

Feb 2020 - Dec 2020 **Deep Learning Research Intern**, *Design and Innovation Center (DIC), Panjab University*, Chandiagrh, India
Developed a Computer-Aided Diagnostic (CADx) system for diagnosing tumors.
Worked with Python, TensorFlow, OpenCV
Advised by Dr. Mamta Juneja

June 2018 - July 2018 **Project Intern**, *UIET, Panjab University*, Chandigarh, India
Developed a flight simulator for the control and evaluation of an Unmanned Aerial Vehicle (UAV).
Worked with MATLAB, Simulink, C++

Teaching

Sept 2022 - April 2023 **Teaching Assistant**, *The Coding School*, Canada (Remote)
Worked as a TA for the Qubit by Qubit (QxQ) course on Quantum Computing, sponsored by IBM Quantum. Facilitated guided labs using Qiskit and the IBM Quantum platform.

October 2021 onwards **Graduate Teaching Assistant**, *University of Victoria*, British Columbia, Canada
Worked as a TA for undergraduate and graduate courses, Quantum Algorithms and Software Engineering (CSC586A/SENG480C) and Software Development Methods (SENG265).
Led instructive guided labs utilizing Qiskit, Q#, Python, and C.

Technical Strengths

Languages	Python, C, C++, Q#, Rust
Frameworks & Libraries	Qiskit, PennyLane, Cirq, PyTorch, Tensorflow - Keras, OpenCV, MLflow, Flask NumPy, Pandas, PySpark, SimPy, PyGitHub
Version Control	Git
Development Tools	GitHub, PyCharm, Jupyter Notebook, Visual Studio

Publications

[1] Jordon, A., Angara, P. P., & **Joshi, S.** (2021, October). Implementing the Simplex Method with Grover's Search. In 2021 IEEE International Conference on Quantum Computing and Engineering (QCE) (pp. 435-436). IEEE.

[2] Juneja, M., **Joshi, S.**, Singla, N., Ahuja, S., Saini, S. K., Thakur, N., & Jindal, P. (2022). Denoising of computed tomography using bilateral median based autoencoder network. International Journal of Imaging Systems and Technology, 32(3), 935-955.

Scholarships and Awards

- 2021-2023 NSERC CREATE Quantum BC Scholar
  Received scholarship for conducting research in quantum computing in BC, Canada.

Invited Talks, Workshops, and Panels

2020-2023 **IEEE Quantum Week (QCE)**
Collaborated with the Institut Quantique, Université de Sherbrooke, Canada, to organize a Quantum Computing workshop for high school students in Bellevue, Washington (2023).
Previous workshops and relevant links: QCE2023, QCE2022, QCE2021

May 2022 & May 2023 **Quantum Intern Advisory Board**, *IBM Quantum*
Led a fireside chat with Dr. Jay Gambetta.
Invited to the Qiskit Advocate Panel for interns.

May 2023 **Quantum Computing Webinars**, *Girls in Quantum*
Gave a one-hour introductory talk on Quantum Machine Learning for beginners.
Relevant links: YouTube

November 2022 **Qiskit Fall Fest**, *Univeristy of Victoria*
Organized a comprehensive 4-hour programming bootcamp on quantum computing, followed by a panel discussion on careers in quantum computing.
Relevant links: GitHub

March 2021 **Women in Quantum**, *Women in Quantum Summit IV*
Addressed a talk to inspire women and girls to pursue studies in Quantum Computing.
Relevant links: YouTube

March 2021 **Artificial Intelligence Workshop**, *DIC, Panjab University*
Presented a two-hour lecture on "Introduction to Convolutional Neural Networks".
Relevant links: YouTube

Volunteering

Aug 2021 - Present **Qiskit Advocate**, *IBM Quantum*
Contributed to various education, outreach, and volunteering programs with help from IBM Quantum community.
Passed the IBM Qiskit Developer Certification - Quantum Computation using Qiskit v0.2X.

Qiskit Advocate Mentorship Program (QAMP) 2021: Contributed to *rustworkx*, a Python and Rust-based graph library.
Worked with Rust
Advised by Matthew Trinesh

Extra-curricular Participation

- Member of the *Qnyble* team at Xanadu QHack 2022. Won 3 challenges (Amazon Braket, Pasqal, and Menten AI) in the Open Hackathon.
  Relevant links: Xanadu, University of Victoria
- Advanced Quantum Badge winner at the IBM Quantum Challenge 2020 and 2021.
  Relevant links: Credly
- Top-10 finisher with special mention for Q-CTRL Challenge at the QCHack Hackathon 2021.