HARSHVARDHAN BABLA

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SKILLS

Programming

Python (with TensorFlow & SciKit-Learn), Java, C#, C, HTML5 & CSS, SQL, Prolog, Q#, Verilog, and Arduino.

Technical Software

MATLAB, COMSOL, Cadence, and SPICE.

Graphic Design

Adobe Photoshop and Illustrator.

Languages

Fluent in English, French, Hindi, Swahili, and Gujarati.

PROJECTS

Investigating the Effect of a Sawtooth Refractive Index Profile of Semiconductor Waveguides in Quantum Cascade Laser | *May '19*

Final Project for ELE 351.

Retroreflectors for a Moving Airplane Wing | *Mar '19*

Midterm Project for ELE 351.

Error Mitigation for Near-Term Quantum Computing | *Feb '19*

IBM Qiskit Camp and Hackathon.

EDUCATION

Princeton University *Expected '21*

B.S.E. in Electrical Engineering (focus in Quantum Information).
Certificates in Applied and Computational Mathematics, Robotics and Intelligent Systems, and Applications of Computing.

Honors: Princeton Electrical Engineering Slingshot Fund Winner – Summer 2019

Relevant Coursework: Quantum Computing, Advanced Quantum Mechanics with Applications, M.L. and Pattern Recognition, Advanced Algorithm Design, E.M. Wave Theory and Photonics, Devices and ICs, Electronic and Photonic Devices, Contemporary Logic Design, Intro. to Programming Systems, Applied Algebra.

EXPERIENCE

Houck Lab, Princeton Electrical Engineering *Jun '19 - Present*

Undergraduate Researcher

- Successfully improved the T1 lifetime of Transmon quantum-bits ten-fold, through methods aimed at reducing losses at material interfaces and improving electrical connectivity between superconductors.
- Characterized fabrication techniques such as isotropic tapered etching of metals, deposition of new materials, and surface cleaning schemes through imaging techniques such as Scanning Electron Microscopy (SEM), Atomic Force Microscopy (AFM), and X-ray Photoelectron Spectroscopy (XPS)
- Perform measurements such as transmission scans, two-tone spectroscopy, pulsed spectroscopy, Rabi Measurements, T1, T2 and T2* on superconducting qubits cooled to millikelvin temperatures.

EXTRACURRICULARS

IgniteSTEM *Sept '18 - Present*

Team Lead for Sponsorships

- Lead a team that has raised upwards of USD. 25,000 (within 2 months) for our bi-annual conferences that are aimed at promoting project-based-learning and creative learning methods to high-school teachers.
- Coordinated with leading EdTech companies for product giveaways and awards to inspirational teachers and educators.

Princeton Robotics Club *Sept '18 – May '19*

Team Lead for Autonomous Drone Hardware Team

- Led a team that focused on optimizing the control systems for the drone's autonomous flight and coding perception algorithms to interpret data from an array of sensors, including time-of-flight sensors, cameras, and motor-encoders.

IEEE - Princeton Chapter *Oct '19 - Present*

President

- Organize graduate school and job application workshops, mentor-mentee groups, professor talks for Electrical Engineering majors at Princeton.

Contemporary Logic Design (ELE206) *Fall '18, Fall '19*

Undergraduate Teaching Assistant

- Answer questions and thoroughly explain concepts related to digital logic and RTL design, as well as assist students debug their coding projects in Verilog.

Princeton Tarana – South Asian Acapella Group *Oct '19 - Present*

Co-President and Base Soloist