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 Robotics and Intelligent Systems, Applications of Computing, and Statistics and Machine Learning

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

- Improving the T1 coherence time of superconducting Transmon qubits by attempting to reduce two-level-system 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)
- Learning to perform measurements such as transmission scans, two-tone spectroscopy, pulsed spectroscopy, Rabi Measurements, T1, T2 and T2* on superconducting qubits cooled to millikelvin temperatures.

Houck Lab, Princeton Electrical Engineering *Jun '18 – Aug '18*

Software Engineer, Research Assistant

- Designed an interactive Python GUI to help the other lab members design coplanar waveguide resonator circuits to simulate photonic lattices.

EXTRACURRICULARS

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.

IgniteSTEM *Sept '18 - Present*

Team Lead for Sponsorships

- Coordinate with leaders from education-based non-profits and firms to talk at and sponsor our conferences, aimed to empower high-school teachers to bring an interactive, creative, and project-based STEM education to their students.

Princeton Robotics Club *Sept '18 - Present*

Team Lead for Drone Hardware Team

- Focused on calibrating control systems for the drone's autonomous flight and programming a RaspberryPi to interpret data gathered from an array of sensors, including time-of-flight sensors, cameras, and motor-encoders.
- Lead and coordinate with team members to design and assemble the drone.

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