Dhruv Devulapalli

1596 Euclid Ave
Berkeley, CA
(512) 665-1774
ddhruv@berkeley.edu | github.com/ddhruv97

EDUCATION

University of California, Berkeley August 2015 - May 2019 (Expected)
B.A. Physics and Computer Science GPA: 3.97 | Physics GPA: 4.00
Upsilon Pi Epsilon (CS Honor Society)
Relevant Upper Division Coursework:

- Physics 137A/B: Quantum Mechanics Sequence
- Physics 105: Analytic Mechanics
- Physics 129: Particle Physics
- Physics 110A: Electromagnetism
- Physics 112: Statistical Mechanics
- Physics 111A/B: Advanced Experimentation
- CS170: Algorithms
- CS 270: Graduate Algorithms
- CS189: Machine Learning
- CS188: Artificial Intelligence
- CS182: Deep Learning
- CS 191: Quantum Computing

RESEARCH EXPERIENCE

Research Assistant January 2018 - Present
Whaley Group, UC Berkeley

- Using Tensor Networks for a hybrid quantum machine learning approach to computer vision problems - classifying digits. Implementing algorithm on existing quantum computing hardware (Rigetti). Designing Tree Tensor Network based circuit to take advantage of local entanglement laws, and work around qubit connectivity and noise issues on near term quantum devices.
- Simulating part of a quantum annealing device using tensor networks
- Implementing TEBD algorithm to find the ground state of ising model lattices represented as matrix product states.
- Simulating adiabatic quantum evolution of ising model lattices

Research Assistant August 2016 - January 2018
ATLAS, Lawrence Berkeley National Lab

- Simulating and profiling a new design for inner pixel detectors at the Large Hadron Collider ATLAS experiment.
- Part of search for dark matter signatures in boosted Higgs decays from proton-proton collisions. Calibrating Higgs tagging algorithms with new truth-based reweighting schemes.
- Profiling new Higgs tagging framework for highly boosted Higgs jets, comparing LHC data with Monte Carlo samples.

TEACHING EXPERIENCE

Instructor and Course Facilitator August 2018 - December 2018
Intro to Quantum Computing DeCal, UC Berkeley

- Created and taught Intro to Quantum Computing course to 27 undergraduates as a DeCal (Student run course)
- Guided and sponsored by Professor Umesh Vazirani.

- Designed syllabus, midterm, project, practice problems.
- Course details - qcb.berkeley.edu/decal.html

INDUSTRY EXPERIENCE

Software Engineering Intern May 2018 - August 2018
Amazon (AWS), Seattle

- Benchmarking and testing face recognition models detection, landmarks, alignment, face embedding, and recognition.
- Created SDK for developing applications using different computer vision models using python, gstreamer, opencv
- Investigating further optimization for Computer Vision Models using tools such as TensorRT

Software Engineering Intern June 2017 - August 2017
Sonos, Boston

- Full stack development for applications across Android, iOS, Mac and Windows.
- Implementing new features within Sonos APIs and applications to cater to user and partner needs.

Software Engineering Intern May 2016 - August 2016
Dabel Brothers

- Built an Android app for the DarkHunters Series Coloring book.

PROJECTS

QSVM: Quantum Support Vector Machine April 2018

- Led team that won the Rigetti Quantum Computing Hackathon with a Quantum Support Vector Machine using pyQuil on Rigettis Quantum Virtual Machine.
- Used quantum routines to perform fast matrix inversion to train and use a binary classifier to distinguish 6 and 9 from the MNIST dataset. (based on arXiv:1410.1054, arXiv:1307.0471)

BCI- Brain Computer Interface April 2018 - May 2018

- Built an EEG to use as a binary (yes/no) controller. Constructed electrodes, notch filters to cut out 60Hz noise, low/high pass filters to cut out other unwanted frequencies
- Wrote LabView programs to analyze signal spectrum between 2 electrodes connected to the head.

Grav: Numerical Gravitation Simulator

- Numerically simulate gravity and coulombic force on multiple particles. Users can add particles with mass, initial Cartesian co-ordinates, and velocity

LEADERSHIP AND EXTRA-CURRICULARS

Quantum Computing at Berkeley: Founder and President

- Created club for students interested in Quantum Computing to connect students, industry, and academia in the field.
- Registering new club, recruiting members, planning activities, projects, and experiments, meeting with professors and research groups, organizing industry events and lab tours
- Setting up a mentorship program to involve more undergraduates from a wide range of backgrounds in quantum computing research.
- Teaching Intro to Quantum Computing DeCal (See teaching experience)

Berkeley Political Review: Staff Writer
Wrote articles on a variety of issues facing California and the United States

HONORS

Phi Beta Kappa, UC Berkeley
Academic Honors in Liberal Arts and Sciences
Dean's List, UC Berkeley
Fall 15, Spring 16, Spring 17, Spring 18
Honors to Date, UC Berkeley
2015-2018
Upsilon Pi Epsilon, UC Berkeley
CS Honor Society for top 1/3rd Computer Science Majors

SKILLS

Programming: C, C++, Python, Java, Scheme/LISP, Android, Root, Objective-C, SQL, JavaScript, PHP, iTensor.
Languages: English (Native Proficiency), Hindi (Intermediate), Telugu (Intermediate), French (Basic)