Nikhil SHARMA

Researcher, Developer, and Educator

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Professional Experience

Present – September 2018 | **Software Engineer | Oasis Labs, Berkeley, CA**
- Working on a privacy-first cloud computing platform on blockchain.

Smart Contracts | FPGA | Software Attestation

August 2018 – May 2018 | **Software Engineering Intern | Google, Mountain View, CA**
- Worked on the Ads: Infrastructure team
- Constructed a statistical analysis tool for visualizing patterns in sampled ad requests
- Derived and implemented scalable approximation algorithms for estimating summary statistics

Bootstrap | jQuery | jslayout | C++ | Google Charts

August 2017 – May 2017 | **Software Development Intern | Amazon Lab 126, Sunnyvale, CA**
- Worked on the Alexa Engine team
- Designed and implemented an extensible API integrating Alexa Voice Service with Alexa Skills Kit
- Product developed into **Alexa Gadgets Toolkit** and made available for commercial use

AWS SQS | AWS Lambda | AWS IAM | IntelliJ | Maven | Raspberry Pi

August 2016 – May 2016 | **Engineering Practicum Intern | Google, Kirkland, WA**
- Worked on the Ads: Engineering Productivity Team
- Constructed an infrastructural tool for dependency tracking and visualization

Java | Eclipse | Dependency injection | RPC

Research

August 2018 – March 2018 | **Summer Undergraduate Research Fellow | Prof. Olga Holtz, Berkeley, CA**
- Explored properties of border rank in tensors for improving complexity of matrix multiplication
- Implemented approximation algorithms for tensor rank using alternating least squares
- Presented work at the 2018 SURF Conference

Tensor Decomposition | Convex Optimization | Complexity Theory

May 2018 – January 2017 | **Undergraduate Researcher | Prof. Dawn Song, Berkeley, CA**
- Worked on developing a scalable and distributed pipeline for machine learning which automatically enforces user-specifiable differential privacy guarantees
- Publication submitted to **IEEE S & P 2019**

Differential Privacy | Machine Learning | SGX Enclaves

November 2015 – November 2014 | **Undergraduate Researcher | Prof. Ken Goldberg, Berkeley, CA**
- Worked in UC Berkeley's **Lab for Automation Science and Engineering**
- Generated massive datasets representing common objects as point meshes for robotic grasping
- Implemented stable pose computation and binary image processing algorithms for object detection

Image Processing | Robotics | Data Mining

Education

2018-2019 **Master of Science** in Electrical Engineering and Computer Science, UC Berkeley
Relevant Coursework: Secure Hardware, Deep Reinforcement Learning, Computer Vision

2014-2018 **Bachelor of Science** in Electrical Engineering and Computer Science (**3.8 / 4.0**), UC Berkeley
Relevant Coursework: Operating Systems, Databases, Data Structures, Algorithms, Security

2014-2018 **Bachelor of Science** in Engineering Mathematics and Statistics (**3.8 / 4.0**), UC Berkeley
Relevant Coursework: Probability Theory, Convex Optimization, Linear Algebra, Stochastic Processes

Teaching

2016-2018	**Computer Science 188**	Introduction to Artificial Intelligence, UC Berkeley
2018	**Computer Science 170**	Algorithms and Intractable Problems, UC Berkeley
2017	**Computer Science 168**	Internet Architecture and Protocols, UC Berkeley
2015-2016	**Computer Science 70**	Discrete Mathematics and Probability Theory, UC Berkeley

Programming Languages

Python	●●●●●
Java	●●●●●
C / C++	●●●●●
Javascript	●●●●○
Rust	●●●●○

Honors Societies

- Tau Beta Pi Engineering Honors Society
- Eta Kappa Nu EECS Honors Society

Test Scores

- SAT: 2360
- GRE: 339

Independent Projects

Enact Systems Shading Algorithm January 2018

Enact Shading Algorithm

Worked as a consultant developer for Enact Systems, a software platform for solar projects. Derived and implemented a production-grade algorithm for 3D spatial analysis which is used to optimize panel placement around rooftop obstructions.

3D Geometry | Python

Image Analogies November 2017

github.com/sharmaster96/Image-Analogies Image Analogies

Implemented the *image analogies* algorithm for image style transfer, as described in the **original paper** by Hertzmann et al.

Computational Photography | Linear Algebra

Computer Science 188 Course Textbook August 2016

Introduction to Artificial Intelligence

Primary author of the official course textbook for *CS 188: Introduction to Artificial Intelligence* at UC Berkeley (wrote 8 of 9 total chapters). The textbook is used by 700-800 Berkeley students in the course each semester.

Artificial Intelligence | LaTeX

Awards and Scholarships

March 2018	**Outstanding Graduate Student Instructor Award** - An award to honor UC Berkeley GSIs each year for their outstanding work in the teaching of undergraduates, nominated from within each teaching department.
October 2017	**Accel Fellowship** - A program for providing unparalleled opportunities for students to grow and develop in unique ways by bridging technology, business, academics, and real world experiences.
July 2014	**UC Berkeley Leadership Award** - A merit-based scholarship that recognizes Cal students who demonstrate innovative, motivational leadership impacting their academic, work, or community environments.
March 2014	**Regents' and Chancellor's Scholarship** - The most prestigious scholarship awarded by the University of California, Berkeley to entering undergraduates.

Volunteering

2018-2019	**EECS Department Delegate** - Serve as a delegate on UC Berkeley's Graduate Assembly, helping draft and pass resolutions relating to graduate affairs including budget allocation, housing, and student groups.
2016-2018	**Campus Outreach** - Served as a mentor for prospective students to UC Berkeley through programs such as *EECS Day*, *Shadow a Math Major Day*, and *Regents' Overnight Stay Program*