

# Brian Timar

San Francisco, CA  
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<https://www.briantimar.com/resume>

Software engineer, particularly interested in applications of differentiable computing and natural language understanding.

## EDUCATION

### M.S., Physics

California Institute of Technology June 2019

### B.A., Physics, highest honors

University of California, Berkeley June 2016

## EXPERIENCE

### Leave of absence

Jan 2020 - Present

Most recently, natural language processing: [embeddings](#), character-level models.

### Visiting Graduate Fellow, Perimeter Institute

June - September 2019

[Policy-gradient methods](#) for constructing weight-free computational graphs - learned benchmark RL tasks with nondifferentiable policies.

### Graduate student, Caltech Physics Dept.

Fall 2016 - June 2019

Under Prof. Manuel Endres, I worked on applications of machine learning to quantum experiments:

- [Noise-regularized RBM wavefunctions](#): developed and implemented a training technique for graphical models that reduced reconstruction infidelity fivefold on noisy data.
- Testing conditional generative models for state tomography in fixed and randomized bases.

Previously, I did numerical and theoretical work on dynamics and phase transitions in blockaded Rydberg systems, and experimental work in the Endres lab, including construction of a tapered amplifier for the narrow-line laser system.

### Summer intern, Schmidt-Kaler group, University of Mainz

Summer 2016

Optics (laser and fiber-optic systems) and operations for a quantum repeater experiment, under the supervision of Marcel Salz.

### Undergraduate researcher, Ion Trap group, U.C. Berkeley

Spring 2015 - Spring 2016

Modeling and construction of high-Q superconducting LC resonators for an ion coupling experiment, under the supervision of Prof. Hartmut Haefner.

### REU visiting researcher, MIT Haystack Observatory

Summer 2014

Developed algorithms for automatic detection of solar radio bursts, under the supervision of Dr. Victor Pankratius.

### Intern, Space Sciences Lab, U.C. Berkeley

Spring 2014

Building and debugging testing apparatus for microchannel plate detectors.

## SELECTED PUBLICATIONS

*Integrating Neural Networks with a Quantum Simulator for State Reconstruction*

Physical Review Letters **123**, 230504 (2019). Editor's Suggestion. [Presented](#) at NeurIPS 2019 ML4PS workshop.

*Towards simulating many-body quantum dynamics with strontium atoms in optical tweezers*

Presented at APS Division of Atomic and Molecular Physics meeting, 2018.

*Automated Discovery of Short Duration Solar Radio Bursts in Murchison-Widefield Array (MWA) Data*

Presented at Space Sciences poster session, American Geophysical Union Fall 2014 Meeting.

## SKILLS

**Numerical and scientific programming** in Python

**Machine learning** – Pytorch and Tensorflow

**Writing** – graduate course material, technical blogging, scientific papers