

## EDUCATION

**University of California, Berkeley**  
Ph.D., Computer Science

2016 - present

**University of California, Berkeley**  
B.A., Computer Science

2012 - 2016  
GPA: 4.00

## AWARDS & HONORS

|                                                                   |                          |
|-------------------------------------------------------------------|--------------------------|
| UC Berkeley EECS Departmental Fellowship                          | August 2016              |
| UC Berkeley Outstanding Graduate Student Instructor Award         | May 2016                 |
| UC Berkeley EECS Warren Dere Design Award                         | April 2016               |
| CRA Outstanding Undergraduate Researchers Award Honorable Mention | December 2015            |
| UC Berkeley EECS Honors Degree Program                            | August 2014 - present    |
| Upsilon Pi Epsilon, Computer Science Honor Society                | December 2013 - present  |
| UC Berkeley Letters and Science Dean's Honor List                 | December 2012 - May 2015 |
| UC Berkeley Kraft Award for Freshman                              | December 2012            |

## PUBLICATIONS

Xinyang Geng\*, Marvin Zhang\*, Jonathan Bruce\*, Ken Caluwaerts, Massimo Vespignani, Vytas SunSpiral, Pieter Abbeel, Sergey Levine.

**Deep Reinforcement Learning for Tensegrity Robot Locomotion.**

*Under review at ICRA, 2017. To be presented at the NIPS Deep Reinforcement Learning Workshop, 2016. arXiv 1609.09049.*

Marvin Zhang, Zoe McCarthy, Chelsea Finn, Sergey Levine, Pieter Abbeel.

**Learning Deep Neural Network Policies with Continuous Memory States.**

*ICRA, 2016. Presented at the NIPS Reasoning, Attention, Memory Workshop, 2015.*

*Presented at the NIPS Deep Reinforcement Learning Workshop, 2015. arXiv 1507.01273.*

## RESEARCH

**Research Assistant, UC Berkeley Artificial Intelligence Research (BAIR) Lab (January 2014 - present)**

Working under the mentorship of Professor Pieter Abbeel and Professor Sergey Levine.

### *Research Projects*

**Deep Reinforcement Learning for Tensegrity Robot Locomotion** ([rll.berkeley.edu/drl\\_tensegrity](http://rll.berkeley.edu/drl_tensegrity))

In this project, we collaborated with NASA Ames to explore the challenges associated with learning locomotion strategies for tensegrity robots, a class of compliant robots that hold promise for future planetary exploration missions. We used a novel extension of mirror descent guided policy search to learn locomotion gaits for the SUPER-ball tensegrity robot. both in simulation under various terrain and gravity settings and on the physical robot.

*Highlights:* This work has been written into a paper, under review at ICRA 2017 and available on arXiv.

**Learning Deep Neural Network Policies with Continuous Memory States** ([rll.berkeley.edu/gpsrnn](http://rll.berkeley.edu/gpsrnn))

In this project, we incorporated memory capabilities into policies for robotic tasks by appending memory states

to the state of the system, and allowing the policy to read from and write to these memory states. By combining this approach with guided policy search, we acquired policies with effective memorization and recall strategies.

*Highlights:* This work has been written into a paper, presented at ICRA 2016 and available on arXiv.

### **Software Projects**

#### **Guided Policy Search** ([rll.berkeley.edu/gps](http://rll.berkeley.edu/gps))

A standardized, open-source implementation of the guided policy search algorithm, developed by myself and several colleagues in BAIR. Full citation:

Chelsea Finn, Marvin Zhang, Justin Fu, Xin Yu Tan, Zoe McCarthy, Emily Scharff, Sergey Levine.

**Guided Policy Search Code Implementation.** 2016. *Software available from [rll.berkeley.edu/gps](http://rll.berkeley.edu/gps).*

#### **parRL** ([github.com/zhangmarvin/parRL](https://github.com/zhangmarvin/parRL))

Framework for parallelizing reinforcement learning algorithms. Developed by myself, PhD student John Schulman, and Professor Pieter Abbeel.

## **TEACHING**

### **CS 61A Instructor, UC Berkeley (Summer 2016)**

Formerly the lead instructor, alongside Brian Hou, for CS 61A, Structure and Interpretation of Computer Programs. Duties included mentoring and supervising the course staff, writing assignments and exams, and lecturing.

*Highlights:* Managed 12 TAs and over 400 students, and implemented several successful changes to the course organization and material based on experiences as a TA.

### **CS 189/289A Teaching Assistant, UC Berkeley (Spring 2016)**

Formerly a Teaching Assistant for CS 189/289A, Introduction to Machine Learning, with Professor Jonathan Shewchuk. Duties included teaching sections, holding office hours, and writing and developing course materials.

*Highlights:* Obtained a perfect teaching rating of 5.0/5.0, and taught graduate students for the first time.

### **CS 188 Teaching Assistant, UC Berkeley (Fall 2015)**

Formerly a Teaching Assistant for CS 188, Introduction to Artificial Intelligence, for one semester, with Professor Stuart Russell and instructor Pat Virtue. (Teaching rating: 4.9/5.0)

*Highlights:* Helped design, develop, and lead supplementary probability sections for students. Also spearheaded the redesign of a project centered around probabilistic inference, HMMs, and particle filtering.

### **CS 61A Teaching Assistant, UC Berkeley (Spring 2014, Fall 2014, Spring 2015)**

Formerly a Teaching Assistant for CS 61A for three semesters, with Professors John DeNero and Paul Hilfinger. (Average teaching rating: 4.83/5.0)

*Highlights:* Taught several guest lectures on topics such as object-oriented and logic programming, and reinforcement learning. Also developed a new project, with another TA, centered around introductory ideas in machine learning.

### **Software Projects**

#### **Yelp Maps** ([cs61a.org/proj/maps](http://cs61a.org/proj/maps))

Project written for CS 61A to introduce students to introductory topics in machine learning, such as k-means clustering and linear regression. Developed with fellow Teaching Assistant Brian Hou and Professor John DeNero.

## **INDUSTRY**

### **Engineering Intern, Prism Skylabs (June - August 2013)**

Interned at Prism Skylabs, an SF-based startup working on computer vision and video imagery analysis. Primary project was complete overhaul, both backend and frontend, of one of their web apps, the iDashboard. Useful in picking up new programming tools and skills including Django, PyCharm, and PostgreSQL.