

# Kathy Jang

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## Education

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|---|-----------------------------|
| <b>University of California, Berkeley</b><br>Ph.D., Department of EECS.<br>Advised by Prof. Alexandre Bayen | <b>Aug 2019 - present</b>   |
| <b>University of California, Berkeley</b><br>B.A., Computer Science   | <b>Aug 2014 - May 2018</b>  |
| <b>University College London</b><br>Affiliate Student, Arts & Sciences                                      | <b>Sept 2016 - Dec 2016</b> |
| <b>Lynbrook High School</b><br>High School Diploma  | <b>Aug 2010 - June 2014</b> |

## Experience

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|---|----------------------------|
| <b>U.C. Berkeley Ph.D Student</b>   | <b>Aug 2019 - present</b>  |
| <ul style="list-style-type: none"><li>■ Researching multi-agent reinforcement learning algorithms and robustness for efficient autonomous vehicle (AV) driving policies as part of the CIRCLES consortium, which aims to deploy 100 AVs onto a real highway by 2023. Performing robustness analysis and directing intermediary physical transfers onto AVs.</li><li>■ Led a project for a collaboration with Toyota, exploring RL as a controller for autonomous vehicles at intersections and examining the effect via penetration analysis. As far as we know, this is an original, never-before-explored application</li><li>■ Researching methods of developing robust, generalizable RL algorithms for policy transfer, for autonomous vehicle control. Developed an end-to-end system including development of the RL policies and deployment onto the physical robotic system (a Turtlebot). Exploring methods of position-based, as well as vision-based training (and perturbation).</li></ul> |                            |
| <b>Lawrence Berkeley National Laboratory</b>  | <b>Jan 2019 - Aug 2019</b> |
| <ul style="list-style-type: none"><li>■ Advised by Profs. Thomas Kirchstetter and Alexandre Bayen</li><li>■ Researching optimal control via deep reinforcement learning methods with a focus on energy and environmental analysis</li></ul>   |                            |
| <b>Berkeley Artificial Intelligence Research Lab</b>  | <b>Aug 2017 - Jan 2019</b> |
| <ul style="list-style-type: none"><li>■ Advised by Prof. Alexandre Bayen</li><li>■ Using deep RL learning techniques to train controllers for autonomous vehicles and demonstrate their ability to decrease traffic congestion</li><li>■ Exploring methods to enable zero-shot policy transfer of simulated policies to they physical domain</li><li>■ Developing open-source framework <i>Flow</i> for traffic flow optimization via RL, with demonstrated improvements in average velocity, at <a href="https://github.com/flow-project">https://github.com/flow-project</a></li></ul>  |                            |

**Intel Corporation**

May 2017 – Aug 2017

- Drove cloud solutions for cloud service providers Baidu and Salesforce to achieve full data center automation
- Analyzed customer data and simulated data to develop trained machine learning models for SSD and DIMM failure prediction, using correlation and Markov models

**Intel Corporation**

May 2016 – Dec 2016

- Adding features, authoring plugins, debugging issues, optimizing for Snap, an open source telemetry framework
- Led team in programming a Snap use case from scratch, which is featured at [vimeo.com/189179198](https://vimeo.com/189179198). Configured VM networking, conducted end-to-end-testing
- Immersion in layers of the data center stack, including exposure to containers, virtualization, scheduling

**Awards & Scholarships**

- The Leadership Scholarship (2014)
- Dean's Honors Fall 2014
- Recurse Center Winter 2019 Fellowship
- Berkeley EECS Excellence Award 19-20
- Diversity & Inclusion Scholarship (2019)
- Dwight David Eisenhower Fellowship (2021)
- National Science Foundation Graduate Research Fellowship (NSF) (2020)

**Selected Publications**

- **Simulation to scaled city: zero-shot policy transfer for traffic control via autonomous vehicles.** Kathy Jang, Eugene Vinitzky, Behdad Chalaki, Ben Remer, Logan Beaver, Andreas Malikopoulos, Alexandre Bayen. International Conference on Cyber Physical Systems (ICCPs) 2019.
- **Benchmarks for reinforcement learning in mixed-autonomy traffic.** Eugene Vinitzky, Aboudy Kreidieh, Luc Leflem, Nishant Kheterpal, Kathy Jang, Cathy Wu, Fangyu Wu, Richard Liaw, Eric Liang, Alexandre Bayen. Conference on Robot Learning (CoRL) 2018.
- **Zero-Shot Autonomous Vehicle Policy Transfer: From Simulation to Real-world via Adversarial Training.** Behdad Chalaki, Logan Beaver, Ben Remer, Kathy Jang, Eugene Vinitzky, Alexandre Bayen, Andreas Malikopoulos. Finalist for Best Paper, International Conference on Control and Automation (ICCA) 2020.
- **Robust Reinforcement Learning using Adversarial Populations.** Eugene Vinitzky, Kanaad Parvate, Yuqing Du, Kathy Jang, Alexandre Bayen, Pieter Abbeel. In submission at ICLR 2020.

**Skills**

Proficiency: Python | Java | Go | Linux | OSX | Tensorflow | Rllib | EC2

Familiar: C | SQL | HTML/CSS | VirtualBox | Docker | Ruby | Photoshop | InDesign

## Relevant Coursework

Deep Reinforcement Learning | Machine Learning | Linear Systems | Optimization | Data Structures and Advanced Programming | Discrete Mathematics and Probability Theory | Linear Algebra and Differential Equations | Networking and Internet Architecture | Computational Complexity | Algorithms | Electrical Engineering | Operating Systems | Machine Learning | Computer Security | Theory of Multi-Armed Bandits | Algorithmic Human-Robot Interaction | Optimization Models in Engineering