

Karena X. Cai
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EDUCATION

- 09/15-present **California Institute of Technology**, Pasadena, CA, Expected June 2020
Ph.D Candidate in Control and Dynamical Systems
Advisors: Richard M. Murray and Soon-Jo Chung
- 09/11-06/15 **Princeton University**, Princeton, NJ
B.S.E. in Mechanical and Aerospace Engineering, Magna Cum Laude
Minors in the Applications of Computing and Robotics and Intelligent Systems

EMPLOYMENT

- 06/19-09/19 **Software Engineer on Prediction Team at Lyft Level 5**, Palo Alto, CA
- Designed the tooling required to extract data relevant to vehicle prediction tasks.
 - Improved the accuracy of existing model-based prediction techniques by 30% by training machine learning models to predict the future behavior self-driving cars.

INVITED TALKS

- 05/19 **Southern California Control Workshop**, University of Southern California
Rules of the Road: Towards Assume-Guarantee Profiles for Autonomous Vehicles

TEACHING/MENTORSHIP EXPERIENCE

- 09/19-current **Marshall Fundamental Credit Recovery Program tutor**, Pasadena, CA
- Teach eighth graders math so they can earn the credit to graduate from middle school.
- 04/18-06/18 **BE 107 Exploring Biological Principles Through Bio-Inspired Design TA**, Caltech
- Designed and led robotics labs with Go-Pi-Go robots so that students could learn ROS fundamentals.
 - Lectured on basic robotics principles and also helped students during lab office hours.
- 04/18-06/18 **CDS 110/CHE 105 Introduction to Feedback Control Systems TA**, Caltech
- Held office hours and graded assignments.
- 09/16-06/17 **Caltech Rise tutor**, Caltech
- Tutored economically disadvantaged high school students in Caltech afterschool program.

HONORS AND AWARDS

- 10/18 **Simoudis Discovery Grant Recipient**, awarded funding to an outstanding student working on emerging projects at the intersection of big data, machine learning, and autonomy.
- 3/16-3/17 **National Science Foundation Honorable Mention**

06/15 **George Bienkowski Memorial Prize**, awarded to a senior student of sound academic standing and who has contributed to the department and engineering through their service during their career at Princeton.

06/15 **Morgan McKinzie 93 Senior Thesis Prize Honorable Mention**

PEER-REVIEWED PUBLICATIONS

K. X. Cai, A. Harvard, R. M. Murray, and S. Chung. *Robust Estimation Framework with Semantic Measurements*. American Control Conference, 2019.

K. X. Cai, T. M. Phan, and R. M. Murray. *Towards Assume-Guarantee Profiles of Autonomous Vehicles*. Conference on Decision and Control, 2019.

TECHNICAL SKILLS

Computer: Python, MATLAB, C/C++, OpenCV, ROS, Arduino, Pro/ENGINEER, and Adobe Illustrator.

Fabrication: Experience with most machining equipment and rapid prototyping tools.