Clark Zhang

Profile

An avid roboticist performing research at the intersection of planning and machine learning.

Education

2016–Present **Ph.D. Electrical Engineering**, *University of Pennsylvania, GRASP Lab*, Philadelphia.
Estimated Graduation Date: May 2021

2019 **M.S. Robotics**, *University of Pennsylvania, GRASP Lab*, Philadelphia.

2012–2016 **B.S.E. Computer Engineering, Mathematics Minor**, *University of Michigan*, Ann Arbor, Summa Cum Laude, GPA: 3.97/4.0.

Experience

2016–Present **Research Assistant**, *University of Pennsylvania, GRASP Lab*, Philadelphia, PA.
- Research motion planning aided by machine learning techniques.
- Research dynamic model learning for control and planning.
- Improving Reinforcement Learning with constraints.

2018–2019 **Graduate Teaching Assistant**, *University of Pennsylvania*, Philadelphia, PA.
- Created homeworks for a graduate *Reinforcement Learning* class (ESE 650).
- Wrote projects for a graduate *Learning in Robotics* class (ESE 680).
- Gave recitation lectures for a graduate probability class (ESE 530).

2019 Sept – Present **Software Engineer (Part-time)**, *Nuro*, Mountain View, CA.
- Behavior prediction for autonomous vehicles.

2019 June – Aug **Software Engineering Intern**, *Nuro*, Mountain View, CA.
- Behavior prediction for autonomous vehicles.

2018 May – Aug **Advanced Robotics Intern**, *Amazon Robotics*, North Reading, MA.
- Used machine learning techniques to improve execution of motion plans.

2016 June – Aug **Robotics Intern**, *Jet Propulsion Laboratory*, Pasadena, CA.
- Researched terrain estimation using Gaussian Process Regression

2015 Sept – 2016 Jan **Lead Computer Vision Engineer and Controls Engineer**, *Vayu, Inc.*, Ypsilanti, MI.
- Led design and implementation of the software architecture for a VTOL aircraft
- Lead engineer on vision based autonomous landing

2015 May – Aug **Undergraduate Technical Intern**, *Intel Corporation*, Hillsboro, OR.
- Microarchitecture verification for Xeon Phi chips

2014 May – Aug **Software Engineering Intern**, *Thomson Reuters*, Dexter, MI.
- Designed and implemented full software features for a Tax and Accounting application

Awards

2018 **Robocup Best Paper Finalist**, *International Conference on Intelligent Robots and Systems*.

2016 **NSF Graduate Research Fellowship**, *University Of Pennsylvania*.

2016 **EECS Outstanding Student Award**, *University Of Michigan*.

2012-2015 **University Honors**, *University Of Michigan*.

2014-2015 **James B Angell Scholar**, *University Of Michigan*.

2014 **EECS Scholar Award**, *University Of Michigan*.

2013 **William J Branstrom Freshman Prize**, *University Of Michigan*.

Publications

- **C. Zhang**, S. Paternain & A. Ribeiro. "Sufficiently Accurate Model Learning for Planning and Control." Submitted to IEEE Transactions on Robotics.
- **C. Zhang**, A. Khan, S. Paternain, & A. Ribeiro. "Sufficiently Accurate Model Learning." In the proceedings of the International Conference on Robotics and Automation (ICRA), 2020.
- **C. Zhang**, J. Huh, D. Lee. "Learning Implicit Sampling Distributions For Motion Planning." In the proceedings of the International Conference on Intelligent Robots and Systems (IROS), 2018. **Finalist for Robocup Best Paper**.
- **C. Zhang**, M. Ono, R. Lanka. "Multiresolution Partitioned Gaussian Process Regression for Terrain Estimation." In the proceedings of the IEEE Aerospace Conference, 2018.
- M. Eisen, **C. Zhang**, L. Chamon, D. Lee, A. Ribeiro. "Learning Optimal Resource Allocations in Wireless Systems." IEEE Transactions on Signal Processing 67.10, 2019.
- B. Lee, **C. Zhang**, Z. Huang, & D. Lee. "Online Continuous Mapping using Gaussian Process Implicit Surfaces." In the proceedings of the International Conference on Robotics and Automation (ICRA), 2019.
- H. Jeong, **C. Zhang**, G. Pappas, D. Lee. "Assumed Density Filtering Q-learning." In the proceedings of the International Joint Conferences on Artificial Intelligence (IJCAI), 2019.
- A. Khan, **C. Zhang**, N. Atanasov, K. Karydis, V. Kumar, & D. Lee. "Memory Augmented Control Networks," ICLR 2018.
- M. Eisen, **C. Zhang**, L. Chamon, D. Lee, A. Ribeiro. "Dual Domain Learning of Optimal Resource Allocations in Wireless Systems." In the proceedings of the International Conference on Acoustics, Speech, and Signal Processing (ICASSP), 2019.
- J. Foy, A. Hassani, J. C. Lagarias, & **C. Zhang**. "Sums Of Two k-th Roots." American Mathematical Monthly: Problems and Solutions, April 2017.

Activities

2019 **Guest Lecturer**, *University of Pennsylvania*.
- Gave lecture to introduce Reinforcement Learning for a graduate Natural Language Processing class.

2014-2015 **Java Workshop Chair**, *IEEE HKN Honor Society*.
- Organized workshops to teach middle school and high school students basic Java programming
- Created lesson plans and a website with resources and taught the workshop

2013–2016 **Michigan Autonomous Aerial Vehicles Team**, Ann Arbor, MI.
- Led a team to research and develop an Extended Kalman Filter for quadcopter state estimation
- Led a team to write and optimize a path planning algorithm
- Created low level scheduler to run on ARM microcontroller

2020 **AI Health Hackathon Finalist**, Weill Cornell Medicine.
- Developed object/text recognition program with haptic feedback to navigate subways for the blind.

2014–2015 **Stryker Sponsored Student Project**, *Stryker Orthopedics*, Ann Arbor, MI.
- Produced wearable device with four students to monitor the knee after total knee replacement surgery
- Designed and populated printed circuit boards and wrote firmware for onboard microcontroller

Skills

Languages C++(11), Python, C, Matlab

Tools Git, Makefiles/CMake, ROS, LaTex

Hobbies

Piano, Running