# Tianyu Wang

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## EDUCATION

**University of California, San Diego**, La Jolla, CA                           Sep. 2016 - Dec. 2023 (Expected)
Ph.D. candidate, Electrical and Computer Engineering. Advisor: Nikolay Atanasov
MS, Electrical and Computer Engineering.

**Haverford College**, Haverford, PA                                              Sep. 2012 - May 2016
Bachelor of Science, Cum Laude. High Honor in Physics.

**University of Oxford**                                                          Oct. 2014 - Jun. 2015
Study Abroad Program. First Class in Physics.

## ABOUT ME

My research interests lie in deep reinforcement learning and imitation learning, with applications in robot manipulation and autonomous driving. **I am looking for software/research engineering positions starting from January 2024.**

## EXPERIENCE

**Existential Robotics Lab**, UC San Diego                                        Sep. 2017 - Present
Graduate Student Researcher. Advisor: Prof. Nikolay A. Atanasov

- Developed reinforcement and imitation learning algorithms in (1) generalizing policies across different robot embodiments, and (2) tackling Sim2Real transfer, especially for high-speed, and precise multi-arm and hand collaboration.
- Combined geometric and semantic map representations to infer autonomous driving policy in CARLA simulator. Developed differentiable motion planners to learn planning costs from demonstrations.
- Implemented mapping and planning algorithms (OctoMap, A*, RRT*) in ROS and Gazebo.

**Waymo LLC.**, Behavior Planner, Prediction, & Controls                          Jun. 2021 - Sep. 2021
Software Engineering Intern. Manager: Yan Jiao

- Deployed reinforcement learning and imitation learning algorithms to improve autonomous driving policies over traditional motion planning algorithms.
- Beat benchmark metrics on improving safety, smoothness and predictability of autonomous vehicle behaviors.

## SELECTED PUBLICATIONS

[1] Binghao Huang, Yuanpei Chen, **Tianyu Wang**, Yuzhe Qin, Yaodong Yang, Nikolay Atanasov, Xiaolong Wang, "Dynamic Handover: Throw and Catch with Bimanual Hands," *Conference on Robot Learning (CoRL)*, 2023.
[2] **Tianyu Wang**, Vikas Dhiman, Nikolay Atanasov, "Inverse Reinforcement Learning for Autonomous Navigation via Differentiable Semantic Mapping and Planning," *Autonomous Robots*, 2023.
[3] **Tianyu Wang**, Nikolay Atanasov, "Inverse Reinforcement Learning of Autonomous Behaviors Encoded as Weighted Finite Automata," *International Conference on Intelligent Robots and Systems (IROS)*, 2022.
[4] Steven Chen, **Tianyu Wang**, Nikolay Atanasov, Vijay Kumar, Manfred Morari, "Large Scale Model Predictive Control with Neural Networks and Primal Active Sets," *Automatica*, 2021.
[5] **Tianyu Wang**, Vikas Dhiman, Nikolay Atanasov, "Learning Navigation Cost from Demonstrations in Partially Observable Environments," *International Conference on Robotics and Automation (ICRA)*, 2020.

## INVITED TALKS

Robotics Seminar, Cornell University                                             March, 2022

## SKILLS

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|---|---|
| **Deep Learning Software Stacks** | PyTorch, TensorFlow |
| **Programming Languages** | Python, C++, MATLAB |
| **Additional Skills** | CARLA, ROS, Docker, Kubernetes |