Adam Villaflor

avillaflor@cmu.edu
https://avillaflor.github.io/

RESEARCH INTERESTS

My main research interests are focused around deep reinforcement learning, generative modeling, and learning for model-based planning. I am particularly interested in developing and deploying algorithms for real-world applications like autonomous driving.

EDUCATION

Carnegie Mellon University Fall 2018 – Spring 2024

- PhD in Robotics

University of California, Berkeley Fall 2014 – Spring 2018

- MS in Electrical Engineering and Computer Science (GPA 4.0)
- BA in Computer Science with High Distinction in General Scholarship (GPA 3.94)

RESEARCH EXPERIENCE

Auton Lab and Argo AI Center, *Carnegie Mellon University* Fall 2018 – Spring 2024

- Advised by Professors Jeff Schneider and John M. Dolan
- Research focused on applying ideas from offline RL, generative modeling, and model-based learning to motion planning and motion prediction in autonomous driving

BAIR Lab, *University of California, Berkeley* Fall 2016 – Spring 2018

- Advised by Professors Pieter Abbeel and Sergey Levine with PhD mentor Gregory Kahn
- Research focused on developing efficient off-policy RL algorithms for real-world navigation on an autonomous RC car

WORK EXPERIENCE

Developer Program Engineer Intern, *Google (Google Cloud Platform DPE Team)* Summer 2016

- Created a LSTM demo that can be used to generate its own novel text for Google's new scalable machine-learning platform Cloud ML

Software Engineer Intern, *3D Robotics* Fall 2015 – Spring 2016

- Worked on the backend for the DroneKit Cloud service

PUBLICATIONS

- **Villaflor, Adam**, Brian Yang, Katerina Fragkiadaki, John M. Dolan, Jeff Schneider. **"Learning Driving Policies with Offline Counterfactual Reactive Simulation."** In submission 2024.

- **Villaflor, Adam**, et al. **"Tractable Joint Prediction and Planning Over Discrete Behavior Modes for Urban Driving."** In ICRA, 2024.
- **Villaflor, Adam**, Zhe Huang, Swapnil Pande, John M. Dolan, and Jeff Schneider. "**Addressing Optimism Bias in Sequence Modeling for Reinforcement Learning**." In ICML 2022.
- Char, Ian, Viraj Mehta, **Adam Villaflor**, John M. Dolan, and Jeff Schneider. "**BATS: Best Action Trajectory Stitching**." In NeurIPS Offline RL Workshop 2021.
- Killing, Christoph, **Adam Villaflor**, and John M. Dolan. "**Learning to Robustly Negotiate Bi-Directional Lane Usage in High-Conflict Driving Scenarios**." In ICRA 2021.
- **Villaflor, Adam**, John Dolan, and Jeff Schneider. "**Fine-Tuning Offline Reinforcement Learning with Model-Based Policy Optimization**." In NeurIPS Offline RL Workshop 2020.
- Triest, Samuel, **Adam Villaflor**, and John M. Dolan. "**Learning Highway Ramp Merging Via Reinforcement Learning with Temporally-Extended Actions**." In IEEE IV 2020.
- Kahn, Gregory*, **Adam Villaflor***, et al. "**Composable action-conditioned predictors: Flexible off-policy learning for robot navigation**." In CoRL 2018.
- Kahn, Gregory, **Adam Villaflor**, et al. "**Self-supervised deep reinforcement learning with generalized computation graphs for robot navigation**." In ICRA 2018.
- Kahn, Gregory, **Adam Villaflor**, et al. "**Uncertainty-aware reinforcement learning for collision avoidance**." Preprint 2017.

TEACHING

Teaching Assistant, *Computer Vision CMU* — Fall 2020

Head Teaching Assistant, *Computer Vision CMU* — Fall 2019

Teaching Assistant, *CS189: Introduction to Machine Learning UC Berkeley* — Spring 2017