

Albert Wilcox

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Education

Georgia Institute of Technology - Atlanta, GA

Ph.D. in Computer Science (focus in ML + Robotics)

Aug 2023 - Present

Advised by **Prof. Animesh Garg**

University of California, Berkeley - Berkeley, CA

Aug 2022 - May 2023

M.S. in Electrical Engineering and Computer Science

Advised by **Prof. Ken Goldberg**

University of California, Berkeley - Berkeley, CA

Aug 2018 - May 2022

B.A. in Computer Science, Applied Mathematics

Advised by **Profs Ken Goldberg, Kris Pister**

Relevant Courses: Robot Learning ◦ Deep Reinforcement Learning ◦ Natural Language Processing ◦ Optimization Models ◦ Linear Algebra ◦ Probability and Random Processes ◦ Statistics ◦ Multivariable Calculus ◦ Real Analysis

Work Experience

Nuro - Software Engineering Intern

June 2022 - Aug 2022

- Worked on the **machine learning research** team, using epistemic uncertainty estimates to improve the RL planner.
- Developed a novel RL method leading to a **22.5% decrease** in simulated collision rate.
- Built scalable, high-performing Tensorflow-based RL algorithm implementations using Python and C++.

Amazon Web Services - Software Development and Engineering Intern

May 2020 - Aug 2020

- Built a data lake to store data emitted by AWS Elastic Load Balancers using a variety of AWS tools.

Georgia Institute of Technology - Teaching Assistant

Fall 2023, Summer 2024, Fall 2024

- TA for online reinforcement learning course and in person deep reinforcement learning (RL) course.
- Designed and graded homeworks and projects, hosted office hours, and delivered lectures concerning RL.

Research Experience

People, AI, and Robots Group - Advised by Prof. Animesh Garg

Aug 2023 - Present

- Studying generative modeling, sequence modeling, imitation learning and reinforcement learning applied to robotics.

Berkeley AI Research - AUTOLab - Advised by Prof. Ken Goldberg

Aug 2020 - May 2023

- Research areas include reinforcement learning, imitation learning, and computer vision applied to real robots.

UC Berkeley Autonomous Microsystems Lab - Advised by Prof. Kris Pister

Aug 2019 - May 2020

- Designed and implemented algorithms for accurate long-horizon dynamics model learning for model-based RL.

Selected Papers

Adapt3R: Unified 3D Scene Representation

- Novel perception backbone for imitation learning algorithms using point clouds designed to enable zero-shot transfer to novel settings.
- SOTA performance on the popular LIBERO-90 multitask IL benchmark and an average of 18.7% and 27.4% improvement over the next best baseline when rolling out zero-shot with novel embodiments and camera poses, respectively.
- First author on paper currently under review.

MCAC: Monte Carlo Augmented Actor Critic

- An easy-to-implement change that can be applied to any off-policy actor-critic algorithm to stabilize and speed up sparse reward reinforcement learning from demonstrations.
- Speeds up learning across the board when combined with common RL algorithms (SAC, TD3) and stabilized online learning when combined with offline RL algorithms.
- First author on paper presented at the **2022 Conference on Neural Information Processing Systems (NeurIPS)**.

LS³: Latent Space Safe Sets

- A novel reinforcement learning algorithm for safe and efficient RL from image observations using a small set of human demonstrations to structure exploration and reason about safety.
- Improved task completion rate by as much as **28%** over the next best prior algorithm while maintaining constraint satisfaction throughout learning for simulated robotics tasks.
- First author on a paper presented at the **2021 Conference on Robot Learning (CoRL)**.

Skills

Areas

Reinforcement Learning ◦ Imitation Learning ◦ Robotics ◦ Generative Modeling ◦ Representation Learning ◦ Computer Vision ◦ Sequence Modeling

Technologies

TensorFlow ◦ PyTorch ◦ NumPy ◦ PyPlot ◦ Python ◦ Java ◦ C ◦ L^AT_EX