Michael Murray

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SKILLS and INTERESTS

Languages: Python, C++, Java, Go, JavaScript, HTML, SQL
Frameworks: Pytorch, Tensorflow, JAX, MXNet, Spark
Platforms: Docker, IsaacLab, MuJoCo, ROS/2, AWS, GCP
Interests: Embodied AI, Robotics, Computer Vision, Human-Robot Interaction

EDUCATION

Ph.D, Computer Science — May 2025
University of Washington

M.Sc, Computer Science — January 2020
University of Washington

B.Sc, Computer Science — July 2009
Neumont College of Computer Science

WORK EXPERIENCE

Amazon Robotics, Applied Scientist Intern — Summer 2024
- Trained and applied large-scale foundation models to the robotic work-cells that automate stowing in Amazon warehouses.
- Models were trained with real-world robot data and combined various modalities including camera sensor data and item metadata into an implicit representation used for predicting the effect of manipulation affordances.

NVIDIA, Robotics Research Intern — Summer 2022
- I worked on end-to-end robot manipulation policies trained by imitating an expert task-and-motion planner in Isaac Sim.
- Policies were conditioned on pre-trained large language model representations to enable mapping from natural language instructions to robot manipulation behavior.

Amazon, Software Development Engineer — March 2016 - November 2020
- I worked on computer vision algorithms for Amazon's Prime Air delivery drone. My small team was responsible for the algorithms to detect other flying objects.
- I was one of the engineers to launch Amazon Go, a physical grocery store powered by computer vision.

LiftIgniter, CTO, Co-founder — August 2013 - January 2016
- As part of Y Combinator's Winter 2014 batch, my co-founder and I built a machine learning powered personalization platform for retailers and publishers.

Google, Software Engineer — May 2011 - August 2013
- I worked on front-end components for Google+, GMail, and YouTube. I was a member of a UI engineering task-force responsible for Google-wide UI redesign.

PUBLICATIONS

- **Teaching Robots with Show and Tell: Using Foundation Models to Synthesize Robot Policies from Language and Visual Demonstration**
  Michael Murray, Abhishek Gupta, Maya Cakmak
  Conference on Robot Learning (CoRL), 2024.

- **Diffusion-PbD: Generalizable Robot Programming by Demonstration with Diffusion Features**
  Michael Murray, Entong Su, Maya Cakmak
  IEEE International Conference on Intelligent Robots and Systems (IROS), 2024.

- **Learning to Grasp in Clutter with Interactive Reinforcement Learning**
  Michael Murray, Abhishek Gupta, Maya Cakmak
  IEEE International Conference on Robotics and Automation (ICRA), 2024.

- **Following Natural Language Instructions for Household Tasks with Landmark Guided Search and Reinforced Pose Adjustment**
  Michael Murray, Maya Cakmak
  IEEE Robotics and Automation Letters (RA-L), 2022.
  *Runner up in Embodied AI challenge at CVPR 2022

- **Learning Backchanneling Behaviors for a Social Robot via Data Augmentation from Human-Human Conversations**
  Michael Murray, Nick Walker, Amal Nanavati, Patricia Alves-Oliveira, Nikita Filippov, Allison Sauppe, Bilge Mutlu, Maya Cakmak
  Conference on Robot Learning (CoRL), 2021.

- **Vision-and-Dialog Navigation**
  Jesse Thomason, Michael Murray, Maya Cakmak, and Luke Zettlemoyer.
  Conference on Robot Learning (CoRL), 2019.

AWARDS

- Allen School PhD Fellowship, 2021
- Amazon Science Fellowship, 2023
- Runner up at CVPR Embodied AI challenge, 2022

TEACHING

- CSE481C: Robotics Capstone, Winter 2024