Mateo Guaman Castro

Contact Information

University of Washington
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Education

University of Washington Sep. 2023 – Present
Ph.D. in Computer Science and Engineering
Advisors: Prof. Byron Boots and Prof. Abhishek Gupta
GPA: 3.92/4.00

Carnegie Mellon University Aug. 2021 – Aug. 2023
M.S. in Robotics
Advisor: Prof. Sebastian Scherer
GPA: 4.04/4.00

Tufts University Sep. 2016 – May 2020
B.S. in Electrical Engineering
GPA: 3.80/4.00

Research Experience

University of Washington Sep. 2023 – Present
Graduate Researcher Assistant Advisors: Profs. Byron Boots and Abhishek Gupta
Working on fast adaptation for continual robot learning.

Robotics Institute (Carnegie Mellon University) Oct. 2021 – Aug. 2023
Graduate Student Researcher *Advisor: Prof. Sebastian Scherer*
Worked on self-supervised traversability costmaps for off-road robot navigation.

National University of Singapore May 2020 – Aug. 2021
Research Intern *Advisor: Prof. Guillaume Sartoretti*
Worked on sequential spatial domain decomposition using reinforcement learning.

Tufts University Jun. 2018 – Aug. 2021
Undergraduate Research Assistant, Research Staff *Advisor: Prof. Jivko Sinapov*
Worked on perception, controls, and simulation for robotic creative problem solving.

Robotics Institute (Carnegie Mellon University) May 2019 – Aug. 2019
Resarch Intern *Advisors: Profs. Howie Choset and Guillaume Sartoretti*
Worked on SLAM-based deep reinforcement learning for hexapod active perception.

Conference Publications

[C1] **VAMOS: A Hierarchical Vision-Language-Action Model for Capability-Modulated and Steerable Navigation**
Submitted to the International Conference on Robotics and Automation (ICRA), 2026
Oral at CoRL 2025 Workshop on Generalist policies in the wild & Robo-Arena challenge
M. Guaman Castro, S. Rajagopal, D. Gorbatov, M. Schmittle, R. Baijal, O. Zhang, R. Scalise, S. Talia, E. Romig, C. de Melo, B. Boots, A. Gupta

[C2] **Long Range Navigator (LRN): Extending robot planning horizons beyond metric maps**
Conference on Robot Learning (CoRL), 2025
Best Paper Award at RSS-ROAR 2025 Workshop
M. Schmittle, R. Baijal, N. Hatch, R. Scalise, **M. Guaman Castro**, S. Talia, K. Khetarpal, B. Boots, S. Srinivasa

[C3] **Agile Continuous Jumping in Discontinuous Terrains**
International Conference on Robotics and Automation (ICRA), 2025
Y. Yang, G. Shi, C. Lin, X. Meng, R. Scalise, **M. Guaman Castro**, W. Yu, T. Zhang, D. Zhao, J. Tan, B. Boots

[C4] **DROID: A Large-Scale In-The-Wild Robot Manipulation Dataset**
Robotics: Science and Systems (RSS), 2024
A. Khazatsky, K. Pertsch, ..., **M. Guaman Castro**, ..., Thomas Kollar, Sergey Levine, Chelsea Finn

[C5] **Open X-Embodiment: Robotic Learning Datasets and RT-X Models**
International Conference on Robotics and Automation (ICRA), 2024
IEEE ICRA Best Conference Paper Award
Open X-Embodiment Collaboration

[C6] **TartanDrive 2.0: More Modalities and Better Infrastructure to Further Self-Supervised Learning Research in Off-Road Driving Tasks**
International Conference on Robotics and Automation (ICRA), 2024
M. Sivaprakasam, P. Maheshwari, **M. Guaman Castro**, S. Triest, M. Nye, S. Willits, A. Saba, W. Wang, S. Scherer

[C7] **How Does It Feel? Self-Supervised Costmap Learning for Off-Road Vehicle Traversability**
International Conference on Robotics and Automation (ICRA), 2023
M. Guaman Castro, S. Triest, W. Wang, J. M. Gregory, F. Sanchez, J. G. Rogers III, S. Scherer

[C8] **Learning Risk-Aware Costmaps via Inverse Reinforcement Learning for Off-Road Navigation**
International Conference on Robotics and Automation (ICRA), 2023
S. Triest, **M. Guaman Castro**, P. Maheshwari, M. Sivaprakasam, W. Wang, S. Scherer

[C9] **Toward Life-Long Creative Problem Solving: Using World Models for Increased Performance in Novelty Resolution**
International Conference on Computational Creativity (ICCC), 2022
E. Gizzi, W. W. Lin, **M. Guaman Castro**, E. Harvey, J. Sinapov

[C10] **A Novelty-Centric Agent Architecture for Changing Worlds**
International Conference on Autonomous Agents and MultiAgent Systems (AAMAS), 2021
F. Muhammad, V. Sarathy, G. Tatiya, S. Goel, S. Gyawali, **M. Guaman Castro**, J. Sinapov, M. Scheutz

[C11] **Creative Problem Solving by Robots Using Action Primitive Discovery**
International Conference on Development and Learning (ICDL), 2019
E. Gizzi, **M. Guaman Castro**, J. Sinapov

Workshop and Short Papers

[W1] **TartanDrive 1.5: Improving Large Multimodal Robotics Dataset Collection and Distribution**
ICRA Workshop on Pretraining for Robotics, 2023
M. Sivaprakasam, S. Triest, **M. Guaman Castro**, M. Nye, M. Maulimov, C. Ho, P. Maheshwari, W. Wang, S. Scherer

[W2] **A Framework for Creative Problem Solving Through Action Discovery**
RSS Workshop on Declarative and Neurosymbolic Representations in Robot Learning and Control, 2021
E. Gizzi, **M. Guaman Castro**, W. W. Lin, J. Sinapov

Theses

[T1] **Self-Supervised Costmap Learning for Off-Road Vehicle Traversability**
Master's Thesis, Carnegie Mellon University, 2023
M. Guaman Castro

Honors and Awards

GSA Conference Funding for organizing ICML workshop, CMU 2023
Summa Cum Laude, Tufts University 2020
Member of IEEE Eta Kappa Nu, Tufts University 2019 – 2020

Teaching Experience

ES 3: Introduction to Electrical Systems Fall 2018
Tufts University

Service

Organizer
– **RSS 2025 Workshop on Resilient Off-road Autonomous Robotics**, 2025

– **ICRA 2024 Workshop on Resilient Off-road Autonomy**, 2024
– **LatinX in AI Workshop at ICML**, Social Chair 2023

Community
– **CMU Robotics Institute Climate Committee**, Member 2023
– **CMU Field Robotics Center Activities Committee**, Chair 2022 – 2023
– **CMU AI Undergraduate Mentoring Program**, Mentor 2022
– **ICLR and ICML Virtual Conferences**, Volunteer 2020
– **Tufts University ECE Student Board**, Member 2017 – 2018

Reviewer: CoRL 2025, ICRA 2024-2025

Industry Experience

SharkNinja Operating LLC Jun. 2018 – Aug. 2018
Electrical Engineering Intern
Designed and assembled a testbed for STM32 ARM Cortex-M0 microcontrollers.

Skills

Programming Languages	Python, C/C++, MATLAB, Julia, HTML/CSS
Machine Learning	JAX, PyTorch, Tensorflow
Simulators	Isaac Lab, Isaac Gym, MuJoCo, PyBullet
Robotics	ROS, Field Testing
Developer Tools	Git, Docker, SLURM
Electrical	Soldering, Circuitry
Languages	Spanish (native), English (fluent)