MAX B. RUDOLPH

mrudolph@cs.utexas.edu http://maxrudolph1.github.io/

EDUCATION

University of Texas at Austin PhD in Computer Science Advised by Amy Zhang and Peter Stone

Georgia Institute of Technology, GPA: 4.0/4.0MS in Electrical and Computer Engineering Advised by Harish Ravichandar

Georgia Institute of Technology, GPA: 3.86/4.0 BS in Electrical Engineering (Highest Honors), Minor in Robotics

PUBLICATIONS

- 4. Rethinking Sim2Real: Lower Fidelity Simulation Leads to Higher Sim2Real Transfer in Navigation Truong, J., Rudolph, M., Yokoyama, N., Chernova, S., Batra, D., Rai, A. Conference on Robot Learning (CoRL), 2022
- 3. Trait-aware Heterogeneous Reinforcement Learning for Multi-Robot Teams Rudolph, M., Sinha, S., Ravichandar, H. in preparation
- 2. Desperate Times Call for Desperate Measures: Towards Risk-Adaptive Task Allocation Rudolph, M., Chernova, S., Ravichandar, H. IEEE International Conference on Intelligent Robots and Systems (IROS), 2021
- 1. Heterogeneous Multi-agent Coverage Control for Range Limited Robots Rudolph, M., Wilson, S., Egerstedt, M. IEEE International Conference on Robotics and Automation (ICRA), 2021

RESEARCH EXPERIENCE

Machine Intelligence and Decision Making Lab UT Austin Advisor: Profs. Amy Zhang and Peter Stone	2022 - Present
Working on generalizable methods for training reinforcement learning agents.	
Robot Autonomy and Interactive Learning Lab	2020 - 2022
Georgia Tech Advisors: Profs. Harish Ravichandar and Sonia Chernova	
Researched structed multi-agent learning algorithms for heterogeneous multi-agent tear	ns and studied
inefficiencies in sim2real methods	
Robotics and Intelligent Systems Lab	2018 - 2020
Georgia Tech Advisor: Prof. Magnus Egerstedt	
Designed novel algorithms for performing coverage control using a heterogeneous multi-	robot team.

Georgia Tech Systems Research Lab

Georgia Tech Advisor: Prof. Fumin Zhang

August 2022 - Present

December 2021

May 2020

2017 - 2018

AWARDS AND HONORS

NSF NRT Ethical AI Fellowship, UT Austin	2022-2024
Georgia Tech Stand-up Comedy Contest Winner, Georgia Tech Comedy Show	2018
Idea2Prototype Award, Georgia Tech, Create-X	2018
Summer Undergraduate Research Fellowship Jet Propulsion Labrotory, Caltech	2019,2020
Faculty Honors Georgia Tech	2016-2020
Dean's List Georgia Tech	2016-2020

LEADERSHIP

IEEE Robotics Club , Controls Team Lead	2017-2020
The Makery @ Georgia Tech, President	2018-2019
Yellow Jacket Fencing Club, Captain	2018, 2021
Yellow Jacket Space Program, Software Lead	2019
TEACHING EXPERIENCE	

- ECE 3084: Signals and Systems Georgia Tech
- PHYS 2211: Intro to Physics Georgia Tech

POSTER PRESENTATIONS

•	Heterogeneous Multi-agent Coverage Control
	Rudolph, M., Wilson, S., Egerstedt, M.
	Poster presented at the 2020 Undergraduate Research Program, Georgia Tech

- FLYIR: An Integrated solution for SLAM in Disaster Scenarios Rudolph, M., Shah, B., Zhang, F. Poster presented at 2018 Idea2Prototype Convention
- NanoBlimp: A Platform for Multi-Agent Systems Research Rudolph, M., Mishra, V., Zhang, F. Poster presented at 2018 Vertically Integrated Projects Poster Session

WORK EXPERIENCE

Autonomous Systems Intern

May 2020 - August 2020

2020-2021

2017-2020

Jet Propulsion Laboratory

- Validated guidance and control algorithms for the Psyche spacecraft
- Developed analysis algorithms for Monte Carlo simulations of spacecraft pointing algorithms
- Built dynamic system to update spacecraft simulation with ever-changing spacecraft properties

Flight Software Lead

January 2019 – January 2020

Georgia Tech Yellow Jacket Space Program (YJSP)

- Developed software for state estimation and control of TIAT, YJSP's testbed rocket
- Wrote C++ code to read gyro and accelerometer values for a second order state-estimator
- Designed PID controller to control the attitude canards on the rocket

Mars 2020 Software System Testbed Intern

Jet Propulsion Laboratory

- Developed test procedures for the Mars 2020 System Testbed
- Wrote automation scripts in Python for the Remote Sensing Mast (RSM) on the Mars 2020 Rover
- Automated image acquisition tests by developing procedures to interface with Ground Data System
- Ran flight software tests on the engineering model of Mars 2020 rover to detect software failures
- Performed range of motion tests for azimuth and elevation actuators for RSM

Intern in Science and Tech

National Security Agency

- Repaired and operated small Unmanned Aerial Systems (UAS) for antenna elevation
- Analyzed flight data from Pixhawk flight controller using MATLAB to validate Real Time Kinematic (RTK) algorithms
- Built and tested RF-Fiber Optic communication systems
- Performed load analysis on analog RF and fiber optic components

SKILLS

Languages: Python, Matlab, C++ , Java

Software: PyTorch, NumPy, ROS, Tensorflow, git, ${\rm LATEX},$ Microsoft Office, Robotarium, AutoDesk Inventor, OnShape

RELEVANT COURSEWORK

Statistical ML	Mathematical Foundations of ML	Applications of DSP
Linear Systems and Control	Networked Control	Deep Learning
Digital Image Processing	Machine Learning	Modern System Theory
Signals and Systems	Dynamics of Rigid Bodies	Advanced DSP

May 2018 – August 2018