MAX B. RUDOLPH

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

EDUCATION

University of Texas at Austin *August 2022 - Present*
PhD in Computer Science
Advised by Amy Zhang and Peter Stone

Georgia Institute of Technology, GPA: 4.0/4.0 *December 2021*
MS in Electrical and Computer Engineering
Advised by Harish Ravichandar

Georgia Institute of Technology, GPA: 3.86/4.0 *May 2020*
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 preperation

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 2022 - Present
UT Austin *Advisor: Profs. Amy Zhang* and *Peter Stone*
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 teams 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 2017 - 2018
Georgia Tech *Advisor: Prof. Fumin Zhang*

AWARDS AND HONORS

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
Student Faculty Program *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 2020-2021
- **PHYS 2211: Intro to Physics** Georgia Tech 2017-2020

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
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 May 2019 – August 2019
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 May 2018 – August 2018
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, 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