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Gabriel Margolis

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Education

Massachusetts Institute of Technology (MIT) Cambridge, MA
Candidate for B.S. Aerospace Engineering, GPA: 5.0/5.0 June 2020

- Coursework: Cognitive Robotics, Embodied Intelligence, Robotics: Science and Systems, Autonomy and Decision Making, Feedback Control Systems, Machine Learning, Game Theory, Algorithms, Fluid Mechanics

Experience

General Motors Detroit, MI
Intern June-August 2019

- Member of the Advanced Autonomous Behaviors, Planning and Control Software department

Model-based Embedded and Robotic Systems Group, MIT CSAIL Cambridge, MA
Undergraduate Researcher (SuperUROP) Sept 2018-May 2019

- Researched accelerated methods for robotic predictive mapping in selective year-long research program
- Findings will be applied in field during Woods Hole Oceanographic Institution deep-sea expeditions this year

Undergraduate Researcher Feb-May 2018

- Designed and integrated web command and control interface for high-efficiency UAV in Python with Flask
- Interface facilitated implementation of group's state estimation and planning algorithms

MITRE Corporation Bedford, MA
Positioning, Navigation, and Timing Intern June-August 2018

- Developed MATLAB simulation of integrated aircraft control, dynamics, and state estimation system
- Presented to department research findings on aircraft autopilot response to faulty GPS measurement data

Future Urban Mobility Laboratory, Singapore-MIT Alliance for Research and Tech Singapore, Singapore
Research Assistant May-July 2017

- Collaborated with a team of graduate students developing data-informed urban planning web services
- Learned relevant languages and skills (Java, SQL, REST) to deliver a deployment-ready service by deadline

Projects

Autonomous Vehicle Racing Feb-May 2019

- Implemented control, perception, localization, planning, visual navigation in ROS, OpenCV, Git, TensorFlow
- Team took 1st place of 20 entries in annual MIT autonomous vehicle race

Hierarchical Deep Reinforcement Learning Feb-May 2019

- Replicated results from 2016 paper using Python and Tensorflow, released implementation on GitHub
- Additional experiments separated the impacts of sparsity and observability in temporal abstraction

Monte Carlo Tree Search for Multi-agent Collaboration Feb-May 2019

- Delivered an advanced lecture and designed a problem set for graduate-level Cognitive Robotics class
- Implemented Hierarchical MCTS for asymmetric collaboration between mothership and tethered AUV

Leadership and Activities

Tau Beta Pi Engineering Honor Society *Chair of Committee Awarding $50k in Service Fellowships (2019-20)*
Lightweight Men's Rowing *Division 1 Collegiate Athlete (2016-20), High School Team Captain (2015-16)*
Kappa Sigma Fraternity *President (2019), Treasurer (2018-19), Philanthropy Chair (2017-18)*
MIT Office of the First Year *Associate Advisor, Orientation Leader (2018-19)*

Skills

Interests: Robotics, Planning, Control, Perception, Artificial Intelligence **Languages:** Python, MATLAB