STEVEN D. MORAD

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INTERESTS

Field Robotics, Computer Vision, Reinforcement Learning, Dynamics and Mobility

EDUCATION

University of Arizona	Aug 2017 - Sep 201
Master of Science (Thesis) in Aerospace Engineering	GPA: 3.78/4.
Research assistant in the Space and Terrestrial Robotic Exploration Lab	
Mobility, autonomy, and vision for extreme environment and off-world exploration	
University of California, Santa Cruz	Sep 2011 - June 20
	CD1 0 00/1

Bachelor of Science in Honors Computer Science Engineering Honors, Cum Laude

WORK EXPERIENCE

Cambridge Research Laboratory (Toshiba)

PhD Research Intern - Computer Vision Group

- · Collision-free visual navigation to semantically-specified targets using deep reinforcement learning
- · General navigation policies that transfer from ground robots to quadrotors without any retraining
- · Real-world effectiveness on aerial and ground robots in cluttered home and office environments
- · Near-field photometric and multiview 3D reconstruction

NASA Jet Propulsion Laboratory

Graduate Robotics Intern

- · Visual-inertial odometry for an ice-climbing robot in visually-degraded glacial environments
- · Develop robot dynamics, perception, and motion planning in ROS
- · Procedural mesh generation of glacial caves penitente fields

Facebook

Software/Systems (Production) Engineer I/II

- Engineer infrastructure for Facebook's large distributed execution engine
- · Python and PHP/Hack software development
- · Toolchain and OS development for BSD and Linux

TOOLS

Linux, Networking, ROS, Gazebo, PCL, OpenCV, PyTorch, OMPL, C++, Python, Bash, MATLAB, Microcontrollers, Breadboard Prototyping, Soldering, SolidWorks (CAD), 2D/3D LiDAR, Pyrotechnics

SELECTED PUBLICATIONS

Morad, S.D., Mecca, R., Poudel, R., Liwicki, S., Cipolla, R. (2020 June). Embodied Visual Navigation with Automatic Curriculum Learning in Real Environments. Submitted to NeurIPS

Morad, S.D., Nash, J., Higa, S., Smith, R., Parness, A., and Barnard, K. (2019 August). Improving Visual Feature Extraction in Glacial Environments. Dual publication in IEEE Robotics and Automation Letters and The International Conference on Robotics and Automation.

Oct 2015 - Aug 2017

May - Aug, 2018 and 2019

1900

15GPA: 3.60/4.00

Jan 2020 - Jul 2020

Kalita, H., Morad, S.D., Thangavelautham, J. (2019 January). Coordination and Control of Multiple Climbing Robots in Transport of Heavy Loads through Extreme Terrain. SciTech Forum

Morad, S.D., Chandra, A., Thangavelautham, J. (2019 March). A Spring Propelled Extreme Environment Robot for Off-World Cave Exploration. IEEE Aerospace Conference

Morad, S.D., Kalita, H., and Thangavelautham, J. (2018, April). *Planning and Navigation of Climbing Robots in Low-Gravity Environments*. IEEE Institute of Navigation, Position Location and Navigation Symposium

PROJECT MEDIA



(a) (NASA/JPL internships) Evaluating mobility and vision in icy environments



(b) (Research Assistantship) Simulating Deimos flyby and imaging with autonomous drones and structure from motion



(c) (Thesis) Spin-stabilized precessing robot after being dropped 8.7m, a rocket motor is utilized for soft touchdowns