TRAVIS DRIVER

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EDUCATION

Georgia Institute of Technology — August 2019 - Present
Doctor of Philosophy, Robotics — GPA: 4.00/4
Advisor: Professor Panagiotis Tsiotras

Georgia Institute of Technology — May 2022
Master of Science, Aerospace Engineering — GPA: 4.00/4

The University of Texas at Austin — May 2019
Bachelor of Science, Computational Engineering, High Honors — GPA: 3.93/4

RESEARCH EXPERIENCE

Dynamics and Control Systems Lab (DCSL) — August 2019 - Present
Graduate Research Assistant — *Atlanta, GA*

· Conducting research in computer vision, 3D perception, and navigation for proximity operations in space.

NASA Goddard Space Flight Center — June 2022 - September 2022
Visiting Technologist — *Greenbelt, MD*

· Developed novel feature detection and description methods for small body relative navigation.

Nonlinear Estimation and Autonomy Research (NEAR) Group — September 2018 - May 2019
Undergraduate Research Assistant — *Austin, TX*

· Implemented feature detection and tracking algorithms for autonomous spacecraft rendezvous.

Texas Spacecraft Lab — June 2017 - January 2018
Algorithms Team Lead (Sept. 2017 - Jan. 2018), Systems Engineer (June 2017 - Sept. 2017) — *Austin, TX*

· Led team of 5+ engineers to implement machine learning and computer vision algorithms to track target spacecraft for the Seeker mission.
· Designed, integrated, and tested the GUI used to monitor real-time electrical power systems data in orbit for the ARMADILLO mission

Institute for Computational Engineering and Sciences — May 2017 - August 2017
Undergraduate Research Assistant — *Austin, TX*

· Implemented and evaluated novel clustering methods for a stochastic Monte Carlo optimization, sampling, and integration software library.

INDUSTRY EXPERIENCE

Sandia National Laboratories — June 2019 - August 2019
Software R&D Intern — *Albuquerque, NM*

· Implemented feature-based visual-SLAM algorithms for GPS-denied autonomous drone navigation.
· Applied deep learning techniques for robust and efficient object detection in X-ray images.

Northrop Grumman — January 2018 - August 2018
Guidance, Navigation & Control Engineer Intern — *Wallops Island, VA*

· Implemented novel Inertial Navigation System (INS) calibration methods improving navigation performance by $\sim 43\%$.
· Designed software interface to configure the on-board Flash memory of the Attitude Control System.

TEACHING EXPERIENCE

COE 301: Introduction to Computer Programming   August 2017 - December 2017
Teaching Assistant, The University of Texas at Austin   *Austin, TX*

· Aided in teaching core programming concepts in MATLAB, C++, and Fortran to a class of 100+ engineering
  students.

PUBLICATIONS

1. T. Driver and P. Tsiotras. Efficient Feature Description for Small Body Relative Navigation using Binary
   Convolutional Neural Networks. In *AAS Guidance, Navigation and Control (GN&C) Conf.*, Breckenridge,
   CO, USA, February 2023. [Accepted] ☊

2. T. Driver*, K. Tomita*, K. Ho, and P. Tsiotras. Deep Monocular Hazard Detection for Safe Small Body
   Landing. In *AAS/AIAA Space Flight Mechanics Meeting*, Austin, TX, USA, January 2023. *These authors
   contributed equally to this work. [Accepted] ☊

3. M. Dor, T. Driver, K. Getzandanner, and P. Tsiotras. AstroSLAM: Autonomous Monocular Navigation in the
   Vicinity of a Celestial Small Body — Theory and Experiments. *Int. J. of Robotics Research*, 2022. [Under
   Review] [Preprint]

4. T. Driver, K. Skinner, M. Dor, and P. Tsiotras. AstroVision: Towards Autonomous Feature Detection and De-
   scription for Missions to Small Bodies Using Deep Learning. *Special Issue on AI for Space, Acta Astronautica*,
   2022. [Accepted] 📄 ☊

5. M. Dor, K. Skinner, T. Driver, and P. Tsiotras. Visual SLAM for Asteroid Relative Navigation. In *IEEE Conf.
   on Computer Vision and Pattern Recognition (CVPR)*, 1st Workshop on AI for Space, Virtual, June 2021. 📄

6. T. Driver, M. Dor, K. Skinner, and P. Tsiotras. Space Carving in Space: A Visual SLAM Approach to 3D
   Shape Reconstruction of a Small Celestial Body. In *AAS/AIAA Astrodynamics Specialist Conf.*, Lake Tahoe,
   CA, USA, August 2020. 📄

HONORS & AWARDS

NASA Space Technology Graduate Research Fellowship, *NASA* (2021 - Present)

President's Fellowship, *Georgia Institute of Technology* (2019 - Present)

University Honors, *The University of Texas at Austin* (2015 - 2019)

SKILLS

Programming: C++, C, Python, MATLAB, C#, Fortran, Bash, Java
Software: GTSAM, ROS, OpenCV, PyTorch, Tensorflow, Blender, SolidWorks
Certifications: Technician Class Operator Radio License, NASA GSFC Electrostatic Discharge Operator