Liam Robinson

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EDUCATION

Purdue University – West Lafayette, IN

Ph.D. Aeronautical and Astronautical Engineering – 4.0 GPA — January 2024 – Present

MS Aeronautical and Astronautical Engineering – 4.0 GPA — January 2023 – December 2023

BS Aeronautical and Astronautical Engineering – 4.0 GPA — August 2019 – December 2022

EMPLOYMENT

Space Domain Awareness Research – Graduate Research Assistant — October 2021 – Present

- Developing light curve inversion algorithms with Dr. Carolin Frueh's Space Information Dynamics group, estimating the shape and orientation of human-made space object from unresolved optical observations
- Improved existing optimization algorithm for reconstruction of non-convex objects, introducing novel situational awareness capabilities while accelerating model-driven simulation by factor of 10,000
- Collaborated with Ph.D. students on relative pose estimation and filter design for attitude estimation

Astronomical Institute, University of Bern, Switzerland – Visiting Ph.D. student — May 2024 – August 2024

- Worked with Dr. Thomas Schildknecht's optical astronomy group on image acquisition and processing algorithms for satellite characterization

Aerospace Corporation – Graduate Astrodynamics Intern — May 2023 – August 2023

- Implemented cislunar formation flight strategies leveraging quasi-periodic orbits in the CR3BP
- Maintained cislunar orbit visualization tool, worked with engineers to identify and meet internal needs

Katalyst Space Technologies – Guidance, Navigation, and Control Intern — May 2022 – August 2022

- Developed Python framework for dynamic trade studies for Space Domain Awareness pipeline

Analytical Graphics, Inc. – Systems Engineering Intern — May 2021 – August 2021

- Guided 130 engineers analyzing active and planned missions in STK and ODTK
- Designed simulation environment to compute and visualize data transfer in large constellations

AWARDS & FELLOWSHIPS

- National Defense Science and Engineering Graduate Fellowship — May 2023
- NSF Graduate Research Fellowship — May 2023
- NASA National Space Technology Graduate Research Opportunity Fellowship — May 2023
- Third place graduate presentation – *Purdue Aeronautics and Astronautics Symposium* — May 2023
- Best research talk, interdisciplinary research – *Undergraduate Research Conference* — May 2022
- Best undergraduate presentation – *Purdue Aeronautics and Astronautics Symposium* — May 2022

FIRST AUTHOR PUBLICATIONS

[1] L. Robinson and C. Frueh, "Light curve inversion for reliable shape reconstruction of human-made space objects," in *Proceedings of the 32nd AIAA/AAS Astrodynamics Specialist Conference*, Sep. 2022, pp. 1–19.

[2] L. Robinson, "Light curve simulation and shape inversion for human-made space objects," Master's Thesis, Purdue University, Dec. 2023.

RELEVANT EXPERIENCE

Founder of Boilerexams.com — August 2019 – Present

- Published 80 hours of video explanations covering 500 questions from past Purdue calculus exams
- Aided over 15,000 students through 15 years of cummulative watch time and 750,000 views to date
- Lead team of 38 to develop and maintain website integrating exam questions and videos, giving students insight into studying performance with 4,000,000 questions answered to date

TECHNICAL SKILLS

Languages: Python, C, C++, OpenGL/GLSL, MATLAB
Technologies: Git, Sphinx, Docker, Polars, DuckDB
Tools: STK, GMAT, ODTK, SPICE