Liam Robinson

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EDUCATION

Purdue University – West Lafayette, IN
Ph.D. Aeronautical and Astronautical Engineering 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

- Pursuing light curve inversion research in Dr. Carolin Frueh's Space Information Dynamics group, estimating human-made space object shape and attitude from unresolved optical measurements
- 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

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, providing insight to both technical and public-facing work
- Built Python interface to FORTRAN cislunar trajectory design tool, improving usability for analysts
- Wrote extensive internal documentation to aid others documenting Python projects with Sphinx

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

- Developed Python framework for dynamic trade studies for Space Domain Awareness pipeline
- Reviewed pull requests for PEP8 compliance and functionality, improving code quality
- Created modeling architecture materials for SRR presentation, ensuring effective communication

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

- Worked with 130 engineers analyzing active and planned missions in STK and ODTK
- Solved all customer cases, improving product knowledge with satisfaction score of 9.5 / 10
- 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
- 3rd 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

- L. Robinson and C. Frueh, "Light Curve Inversion for Reliable Shape Reconstruction of Human-Made Space Objects", Proceedings of the 32nd Astrodynamics Specialist Conference, August 2022

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 35 develop and maintain website integrating exam questions and videos, giving students insight into studying performance with 2,800,000 questions answered to date

TECHNICAL SKILLS

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