Liam Robinson

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EDUCATION

Purdue University – West Lafayette, IN
PhD Aeronautics and Astronautics – 4.0 GPA — January 2024 – Present
MS Aeronautics and Astronautics – 4.0 GPA — January 2023 – December 2023
BS Aeronautical and Astronautical Engineering – 4.0 GPA — August 2019 – December 2022

EMPLOYMENT

Space Information Dynamics Group – NDSEG Fellow & Graduate Research Assistant — October 2021 – Present

- Developing light curve inversion algorithms with Dr. Carolin Frueh's Space Information Dynamics group, estimating shape and orientation of human-made space objects from unresolved optical observations
- Introduced new light curve inversion algorithms to recover non-convex shapes and complex spin profiles
- Collaborated with PhD students on relative pose estimation and filter design for attitude estimation
- Primary operator of the Purdue Optical Ground Station telescope for light curve collection and processing

Astronomical Institute, University of Bern, Switzerland – Visiting PhD Student — May 2024 – August 2024

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

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

- Designed novel cislunar formation flight strategies for quasi-periodic orbits in the CR3BP

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

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

AWARDS & FELLOWSHIPS

- National Defense Science and Engineering Graduate Fellowship (NDSEG) - $142,000 — May 2023
- NSF Graduate Research Fellowship (GRFP) - $111,000 — May 2023
- NASA National Space Technology Graduate Research Opportunity Fellowship (NSTGRO) - $150,000 — May 2023
- Best graduate presentation – *Purdue Aeronautics and Astronautics Symposium* — May 2025
- 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

SELECTED 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. [Online]. Available: https://hammer.purdue.edu/articles/thesis/_b_LIGHT_CURVE_SIMULATION_AND_SHAPE_INVERSION_FOR_HUMAN-MADE_SPACE_OBJECTS_b_/24728835?file=43481214.

[3] L. Robinson and C. Frueh, "A CCD/CMOS telescope digital twin for space situational awareness," *Advances in Space Research*, vol. 76, no. 5, pp. 3074–3097, 2025, ISSN: 0273-1177. DOI: https://doi.org/10.1016/j.asr.2025.06.053. [Online]. Available: https://www.sciencedirect.com/science/article/pii/S0273117725006659.

[4] L. Robinson and C. Frueh, "Optimal light curve attitude inversion with measurement noise: Two case studies," in *Proceedings of the 9th European Conference on Space Debris*, European Space Agency, Bonn, Germany, Apr. 2025.

RELEVANT EXPERIENCE

Founder of Boilerexams.com — November 2019 – Present

- Developed website used by ~10,000 Purdue students per semester to study for exams in 20 STEM courses
- Built and managed team of 50, providing insight into studying performance with 8,300,000 questions studied to date
- Interfaced with the College of Engineering administrators, Vice Provosts, and members of Board of Trustees

TECHNICAL SKILLS

Algorithms: Single/multi-target Kalman filters, batch estimation, track/catalog association, optical photometry/astrometry
Languages: Python, C/C++, GLSL, MATLAB, SQL, Rust | **Technologies:** Git, Sphinx, Polars, Docker