

# Aidan Velleca

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## EDUCATION

### Purdue University

West Lafayette, IN

*Bachelors of Aerospace Engineering, Minor in Computer Science, GPA 3.1*

*Jun. 2020 - Dec. 2024*

- **Senior Design:** Designed a spacecraft mission using the concept of signals of opportunity to measure soil moisture content worldwide with a 3-day revisit time
- **Zero Gravity Flight Experiment:** Designed pitot tube rake to test TransAstra data acquisition unit

### Universidad Carlos III de Madrid

Leganés, Spain

*Study Abroad*

*Jan. 2023 - June 2023*

## WORK EXPERIENCE

### Flight Dynamics Intern

Mar. 2025 – Present

*AstroForge Inc.*

*Seal Beach, CA*

- Performed trade study to simulate filter performance for representative reference trajectory, varying tracking data types collected
- Implemented automated routine for maintaining potential mission target database

### GNC Engineering Intern

May 2024 – Jul. 2024

*Northrop Grumman*

*Dulles, VA*

- Innovated simulator to include new truth values in new reference frames to support docking
- Introduced a lighting requirement to ensure that spacecraft camera is not facing the sun for too long when within docking range
- Created a new, more robust distance-finding algorithm to avoid spacecraft collisions and trigger abort procedure

### Research and Development Intern

May 2022 – Aug. 2022

*SprintRay*

*Los Angeles, CA*

- Engineered a new mirror calibration tool in SolidWorks for 3D printers to allow for more precise adjustments challenging to make by hand
- Designed model to simulate layer distortion from poor calibration and output correction process
- Disassembled and analyzed competitor products to report on other industry solutions and identify where to prioritize additional improvements
- Analyzed and repaired broken printers

## OTHER EXPERIENCE

### Turret Programmer

Sep. 2023 – May 2024

*Purdue Special Interest Group Game Development*

*West Lafayette, IN*

- Programmed turret spawn mechanics and object-oriented behavior scripts for each type
- Led programming work for a game jam that was published on the club website

### Boiler Gold Rush Team Leader

Apr. 2021 – Sep. 2021

*Purdue University*

*West Lafayette, IN*

- Mentored a group of around ten students and crafted a daily schedule to introduce them to campus
- Mediated conflict and strengthened bonds between new students using leadership skills

## PROJECTS

### Satellite Viewing Tool @ <https://www.skyviewer.dev> | Python, Flask, Astropy, API

Sep. 2024 – Present

- Accessed NASA TLE and OpenAI APIs to provide user with interesting information about satellites
- Utilized Astropy library to calculate satellite parameters

## SKILLS

**Technical:** SolidWorks, MATLAB, Simulation, Software, Git, C, C#, C++, Python, CAD, SQL, Microsoft Excel, Google Cloud, Flask, Ansys ODTK, GMAT

**Interpersonal:** Organization, Communication, Teamwork, Leadership

**Language:** Spanish, Italian