

Progress Report

JANUARY 16, 2026

GitHub

At this point, all code and simulation-related files corresponding to the drone project are already available in the GitHub repository. This includes all scripts, configuration files, and simulation assets used in Isaac Sim and Isaac Lab.

What remains to be added are the documentation files, specifically the written reports describing the encountered errors and the document explaining the overall composition and organization of the GitHub repository. These will be uploaded once finalized.



<https://github.com/PaolaRojas24/SkySpec>

Satellite project status

For the satellite project, a free and accessible dataset has already been identified, which can be used as the basis for developing an initial ship detection model.

This dataset will serve as a starting point for building and validating a basic detection pipeline before moving toward more advanced estimation tasks.



Sand and oil hyperspectral project

For the sand and oil identification project, work has already started directly with the hyperspectral dataset.

A first codebase has been developed with the goal of automatically detecting white and spectrally homogeneous regions in hyperspectral images, while allowing interactive adjustment of the detection criteria for visual validation.

More specifically, the code:

- Loads multiple ENVI hyperspectral cubes.
- Computes mean intensity maps and spectral variability in the visible–NIR range.
- Identifies bright, compact, and spectrally stable regions using thresholding and morphological analysis.

This stage focuses on understanding the data structure and identifying candidate regions that may correspond to reference targets or reflective surfaces.



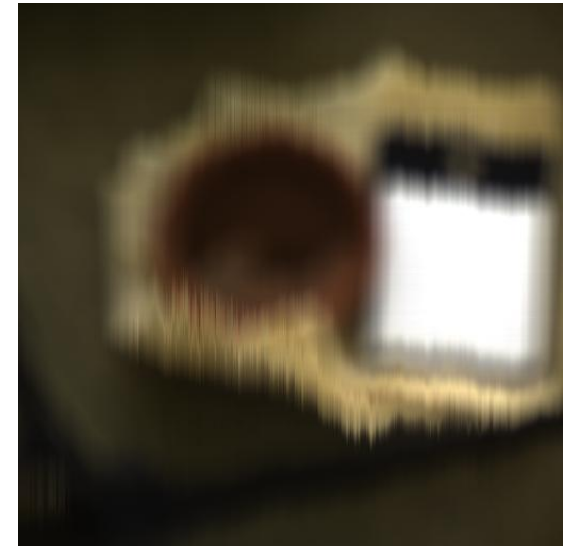
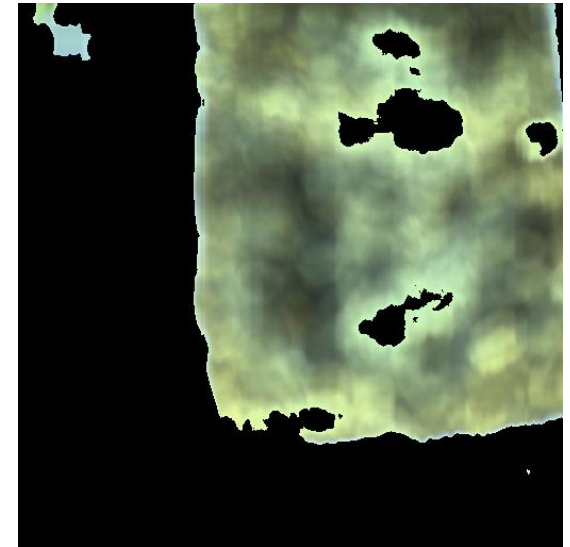
Sand and oil hyperspectral project

In addition to automatic detection, the tool allows real-time parameter tuning through interactive sliders and visual comparison across multiple scenes.

This makes it possible to iteratively refine thresholds and validate the detected regions directly on the data.

In summary, this code functions as an interactive white-target detection and tuning tool for hyperspectral imagery.

At the moment, progress is temporarily paused while waiting for a response to an email that was sent, pointing out that the dataset contains two different types of .hdr files, and asking which format should be used for the project.



Conferences and documentation update

All one-page conference summaries (one-pagers) have now been fully written and are already available in the GitHub repository.

Next Steps

Focus primarily on advancing the hyperspectral imaging project, contingent on receiving a response to the pending email regarding dataset format.

Review and begin testing a baseline model for the satellite project, using the identified public dataset.

Once the GitHub repository reaches a stable state with no major additions pending, write a final guiding document that explains the structure, content, and usage of the repository.