

Hyperspectral Subpixel Detection Experiment

Investigator: John Kerekes

Support Crew: Bo Ding, Dan Goldberg, possibly additional folks

Short Title: Hyperspectral Subpixel Detection

Objectives: Two sets of ground targets with accompanying ground truth will be deployed to provide known quantitative subpixel sizes for use in testing and verifying subpixel detection algorithms. Also plan to use for FASSP (and maybe DIRSIG) validation.

Deployments: ~50 replications of 2 panels the same size but different colors will be deployed in a relatively homogenous flat area. The sizes will 12" x 20" (approximately). One set of panels will be green painted wood and the other will be yellow painted wood. A flat area approximately 20 m x 20 m, at least 50 meters away from structures (trees, buildings, etc.) should be adequate for the deployments. While grass is preferred, a gravel or asphalt area would be fine.

Panels should be placed at least 2 m away from each other, but in a semi-random pattern as shown in Figure 1. A 2 m string (or a 4 m diameter hoop) may be helpful to ensure a clear 2 m radius around each panel. The deployment is a static pattern; no changes will be made between flights.

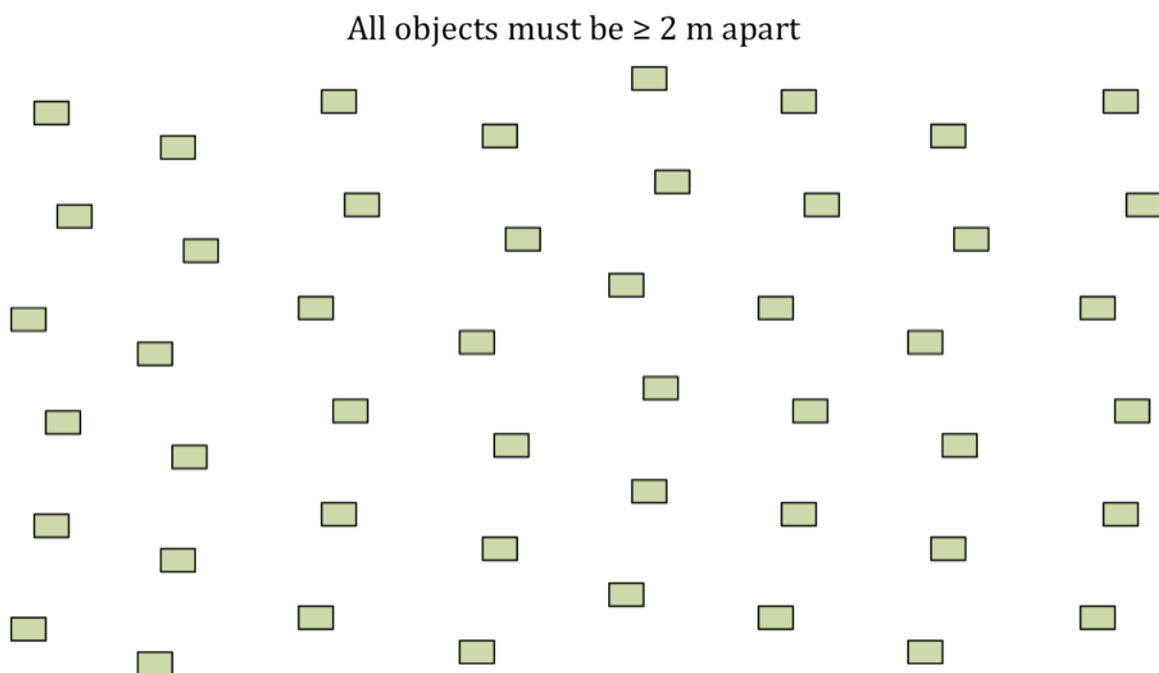


Figure 1. Semi-random target deployment pattern.

Flight Lines: SpecTIR data are required, nominally at 1 m ground resolution. The panels should be deployed near the main experiment site, in an area that can be controlled during the experiment. WASP imagery would be good for assisting with the ground truth.

Flight Constraints:

No specific requirements. Data acceptable to other experiments will be fine here.

Ground Truth Required:

Spectral reflectance of all materials used in panels from 400 to 2500 nm. Samples may be collected prior to experiment (days), but multiple (> 10) measurements should be made of each set while deployed. Very accurate location desired. Ideally center of panels are measured to reference point visible in imagery to within 0.1 meters. Pictures of target deployments and adjacent areas are necessary.

Also, spectral reflectance measurements of adjacent and nearby background materials. Ideally, dozens of representative measurements of each background type.

Equipment:

Camera, GPS, and long tape measure for recording accurate placement grid.