**Test Objective/Description:** Target Imaging

**Location:** Fleming Lab

**Date:**

**Hardware Needed:** Drone with Vicon Marker, human target with Vicon Markers, Guidance

**Procedure:**

Place Vicon markers on the drone and the human target and place them in the Vicon space.

Start the following ROS nodes:

* VRPN clients for drone and cardboard target,
* Guidance,
* SW stereo pipeline,
* IR imaging
* Target tracking.

**Static Test:** The human is directed to move about the space while the drone is kept stationary. The target is moved both in and out of the field of view of the camera.

**Dynamic Test:** The human is directed to move about the space while the drone is moved about by hand in a simulated flight trajectory. The target is moved both in and out of the field of view of the camera.

Start ROS logging Vicon data for both the drone, the cardboard and the target vector from the IR targeting pipeline. Along with the, the raw IR images are logged.

Perform each test at least 20 times to verify accuracy of position measurement and tracking reliability.

**Requirements Met**

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| **1.1.3** |  |
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**Test Anomalies**

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**Test Results:**

For each test, the following analysis are conducted:

* For each target vector report of the targeting subsystem, an estimate is produced of the target location by vector addition of the Vicon pose data from the drone with the target location vector. This estimate is compared to the Vicon ground truth. Euclidean distance is used to measure error between the IR target estimate and the Vicon ground truth.
* The number of frames in which a target is present but not detected, as well as the number of frames in which a target is not present but is detected are counted. A false positive / false negative rate is estimated from collected data.

**Criteria for Success:**

* All nodes start successfully
* IR targeting reports plausible target vectors
* Errors between estimated target location and actual target location are within XX cm. (from requirements)
* False positive / false negative rates are within XX% (from requirements)