**State of Software**

**Incomplete Features**

* Target focusing
  + This feature was implemented but not successfully tested due to other (now resolved) issues. A flight test for this feature must be conducted to determine if it is in a functional state.
  + Description
    - When a detection is made, the detecting drone creates a candidate “focus” task associated with that detection with a flight path point that should give a zoomed-in view of the detection. The detection is transmitted to the operator interface, where the operator has the option of validating the detection or requesting the focus task be distributed by the swarm.
  + Potential issues
    - There is a 1-2 second delay in the video stream that will cause the drone’s current reported location and heading to not align with its actual location in the stream.
    - The calculations to center the target in the frame may be unreliable. Approximate measurements of the drone camera’s horizontal and vertical FOV are used to calculate an approximate angle per pixel in each direction of a video frame. These measurements are used to try and center the detection bounding box vertically (via gimbal angle) and horizontally (via heading) from the drone’s location when the detection was made.

**Known Issues**

* Occasionally one of the drones will get stuck hovering in the air. We observed two cases with this. In both cases, manual takeover with the SkyController is still possible.
  + The SDK will hang on the current moveTo command, indicating a potential hardware/sensor issue or dropped messages from the drone to SkyController. A reasonable timeout for this command should be calculated based on the distance to the point, and handling of that timeout should be implemented (such as re-attempting the command).
  + The moveTo command and all subsequent commands will return immediately without errors or any effects on the drone. The cause of this case and whether software-based recovery is possible are unclear. Further investigation needed.
* In our last flight test, the “End” button in the operator interface did not seem to function properly (despite having worked previously). The expected behavior for this is that the drones will receive a “ReturnHome” message and will then immediately route to their home point and land (if they haven’t already). A flight test should be conducted to confirm the state of this feature.
* The selected CV model does not perform well with snow. See the Target Detection Trade Study for more information.

**Areas for Improvement**

* The mission software “SwarmCoordinator” class is a bit monolithic and could use some refactoring