**Objective:** Allow a user watching a video stream to click on a target of interest, and to enable the system to continuously track the target and accurately estimate its GPS coordinates.

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**Problem Summary**

1. **Step 1.** User identifies target of interest in the video stream.
2. **Step 2.** Computer vision algorithm tracks the target in the video stream.
3. **Step 3.** UAV sensors are used to estimate the relative position of the target, and its GPS coordinate is estimated from the UAVs GPS sensor.
4. **Step 4.** Servo pan-tilt gimbal so that object is in center of image
5. **Step 5.** Modify flight path of UAV to orbit object

**Approach**

1. Kalman filter raw data
2. On-board gimbal calibration
3. Optimal flight path selection
4. Wind estimation and compensation
5. Telemetry Synchronization
6. Range Estimation Using Digital Elevation Models

**Results**

- Relative target estimation error less than 2 meters after one orbit
- First successful flight test in 2005.
- Licensed to Procerus Technologies in 2006.
- Commercial product: OnPoint

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