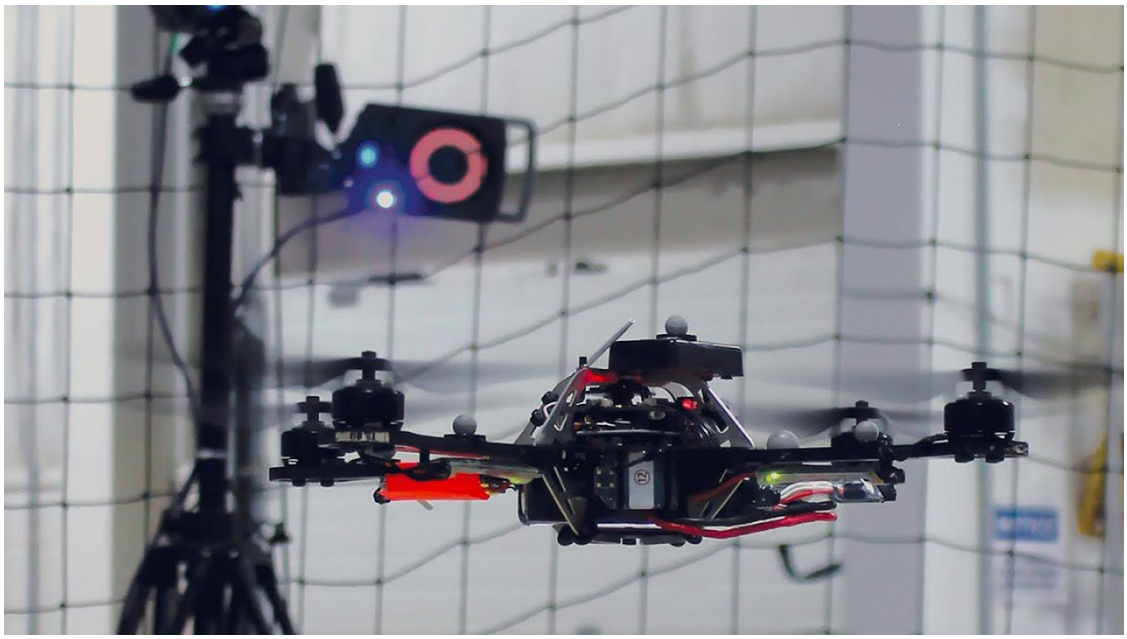
ECE 555-01 HW#1
Prof: Fred Livingston, PhD
Due: Thursday, January 27th (5pm)



Given a robot located at -2x + 3y + 5z with the following IMU orientation: Roll = 5 deg, Pitch = -5 deg, Yaw = 10 degrees. The robot has a sensor that is mounted 1 units from its object z axis. The sensor detects an object with the following transformation.

```
Ts_obj =

    0.1730   -0.9811    0.0872    2.2486
    0.9797    0.1805    0.0868   -2.8482
   -0.1009    0.0704    0.9924   -4.9789
         0         0         0    1.0000
```

Determine the location and orientation of the object in reference the world coordinate system.

- Draw a system Pose Graph **[10 Pts.]**
- Determine the Pose of robot w.r.t world **[30 Pts.]**
- Determine the Pose of the Sensor w.r.t robot **[5 Pts.]**
- Determine the Pose of the object w.r.t world **[50 Pts.]**
- Prove that the Rotations component is valid **[5 Pts.]**