Problem 1

The test that I used to determine inlier versus outlier was:
given some point, compute the distance between the point and the corresponding epipolar line. If this distance is less than some threshold, then this point is considered an inlier. Otherwise, the point is considered an outlier.

Our approximate F matrix is as follows:

F =

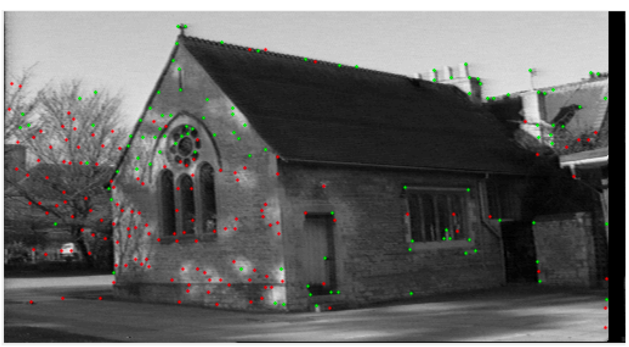
-0.0000	0.0000	-0.0000
0.0000	-0.0000	0.0123
-0.0000	-0.0119	-0.1403

8 Randomly selected points with corresponding epipolar lines:

Here is another 8, directly from the output. (Note: DIFFERENT run than from the first one)

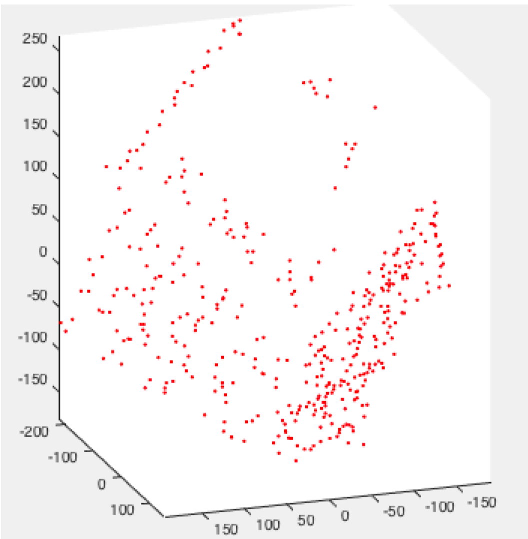
Inliers & Outliers (Inliers are GREEN outliers are RED)
The following are several DIFFERENT instances (not the same run). Therefore, the resulting inliers will be a little different. Regardless, it allows you to see how modifying the threshold changes the inliers vs. outliers.
High threshold (0.10), num inliers = 193

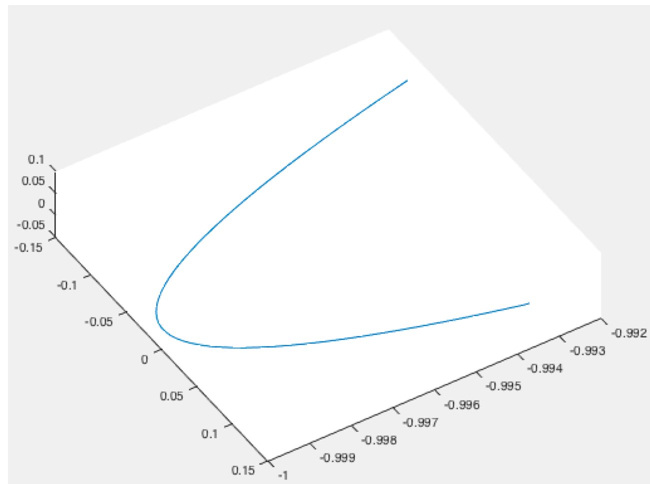
Med threshold (0.05), num inliers = 107

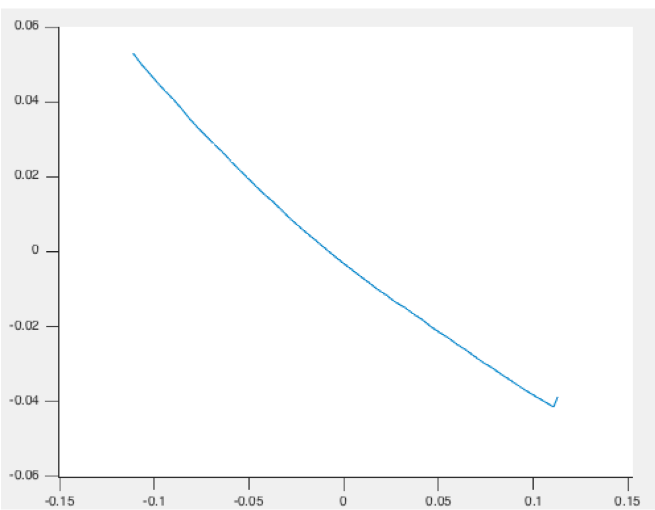


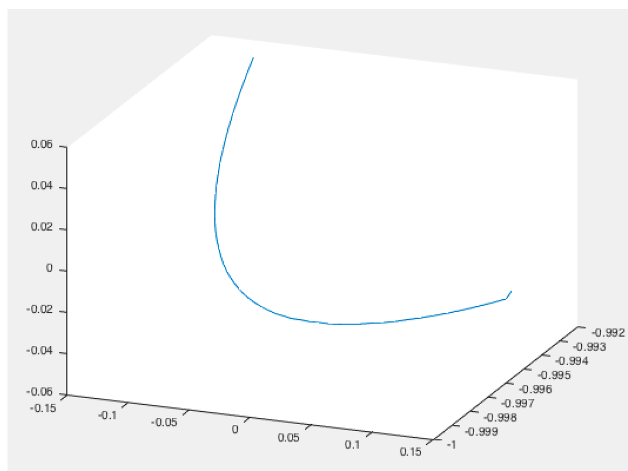
Low threshold (0.01), num inliers = 22

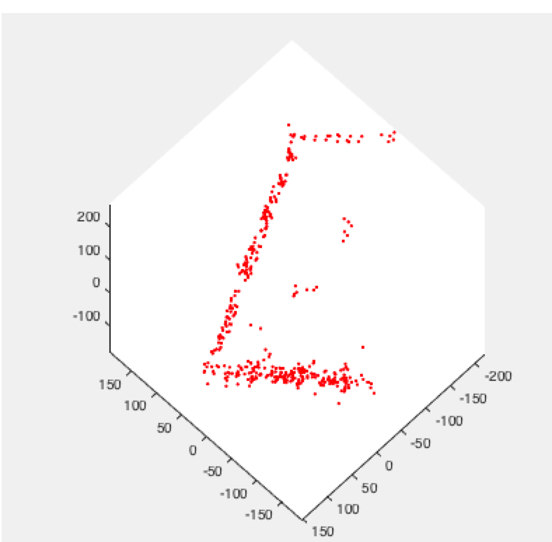
Problem #2
RESULTS:

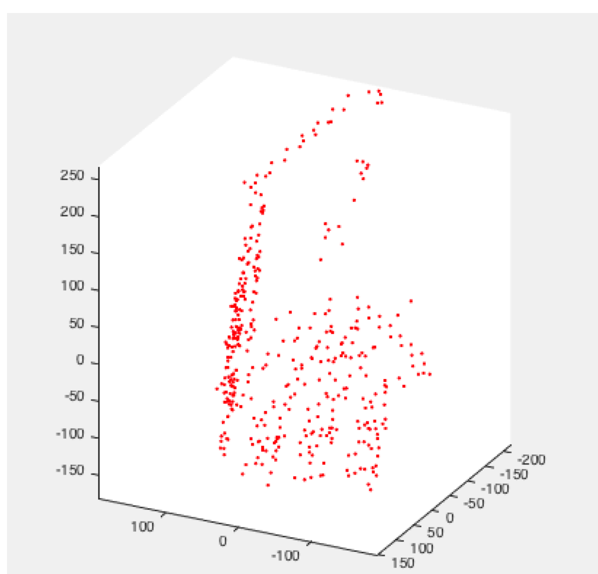












Pseudo code:
input: n tracked points across m images

1. remove tracked points that move out of tracking range (take on NaN value) from set. update n to reflect this change.
2. re-center (shift) the tracked points such that their mean is at the origin.
3. construct matrix D s.t. D = [x coordinates; y coordinates], |D| = 2m x n
4. factorize D into [U, W, V]
5. set the following:
    1. U3 = U(:,1:3);
    2. V3 = V(:,1:3);
    3. W3 = W(1:3,1:3);
6. Initialize our motion (affine) matrix A and our shape matrix S s.t.
    1. A = U3 * sqrt(W3);
    2. S = sqrt(W3) * V3';
7. Compute a new matrix A~ (3m x 9), where every row is: reshape([a b c]'*[d e f], [1,9]) a,b,c,e,f,g are assigned as follows for every coordinate pair in A. See illustration to the right.
8. compute L = reshape(A~\b,[3,3]) where b = [1 1 0 1 1 0 1 1 0 … 1 1 0]
9. compute C using cholesky decomposition on L.
10. Compute new A = AC
11. Compute new S = C^(-1)S
12.]