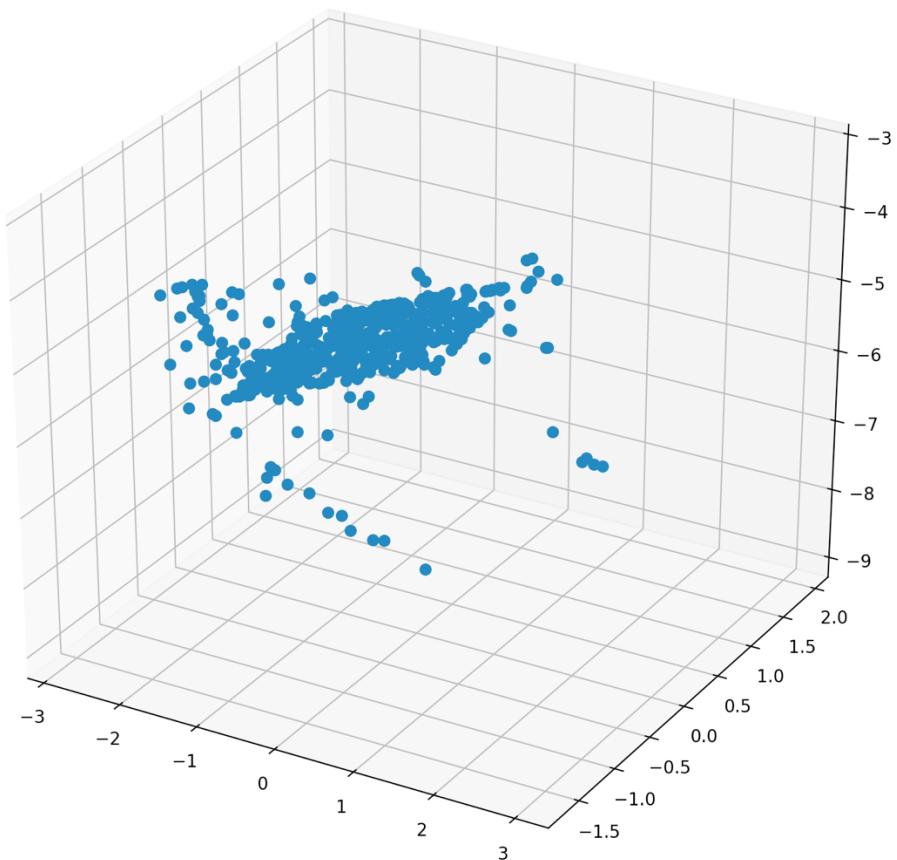
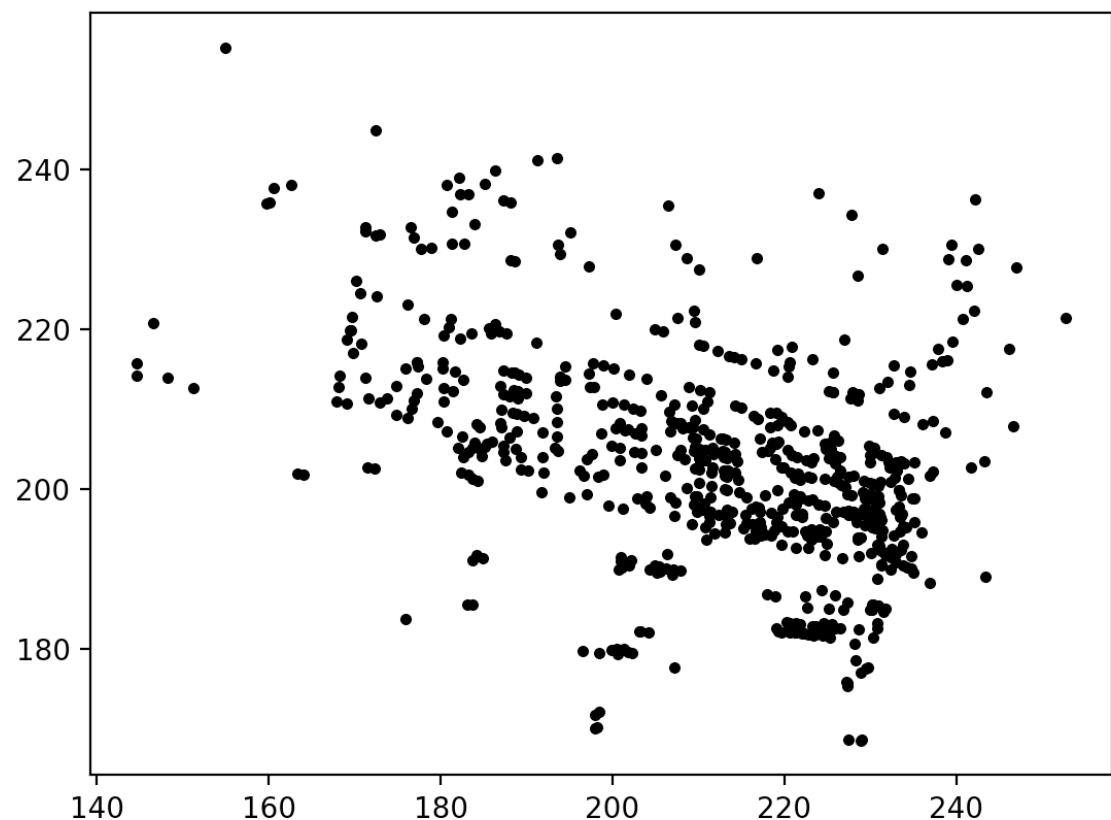


Task 6.1P

house.p3d (3D points)



house.p3d (3D points onto an image using camera matrix P)



Vary n_points

```
index of the smallest singular value is: [11]
For 10.0% of the total n_points (67 n_points), the distance is 0.0009676248509551945

index of the smallest singular value is: [11]
For 20.0% of the total n_points (134 n_points), the distance is 0.0007550768787457173

index of the smallest singular value is: [11]
For 30.0% of the total n_points (201 n_points), the distance is 0.0006916393607622562

index of the smallest singular value is: [11]
For 40.0% of the total n_points (268 n_points), the distance is 0.0008188083018393099

index of the smallest singular value is: [11]
For 50.0% of the total n_points (336 n_points), the distance is 0.00038593385705373547

index of the smallest singular value is: [11]
For 60.0% of the total n_points (403 n_points), the distance is 0.0022206471688649143

index of the smallest singular value is: [11]
For 70.0% of the total n_points (470 n_points), the distance is 0.0018820881710619522

index of the smallest singular value is: [11]
For 80.0% of the total n_points (537 n_points), the distance is 0.0015262963498052398

index of the smallest singular value is: [11]
For 90.0% of the total n_points (604 n_points), the distance is 0.0011365411496302295

index of the smallest singular value is: [11]
For 100.0% of the total n_points (672 n_points), the distance is 0.00048677788757288084
```

The best value for n_points is 50% of the total number of points, which is 336 points as the distance is the smallest at 0.00038593385705373547 between x_P and x_P_hat.

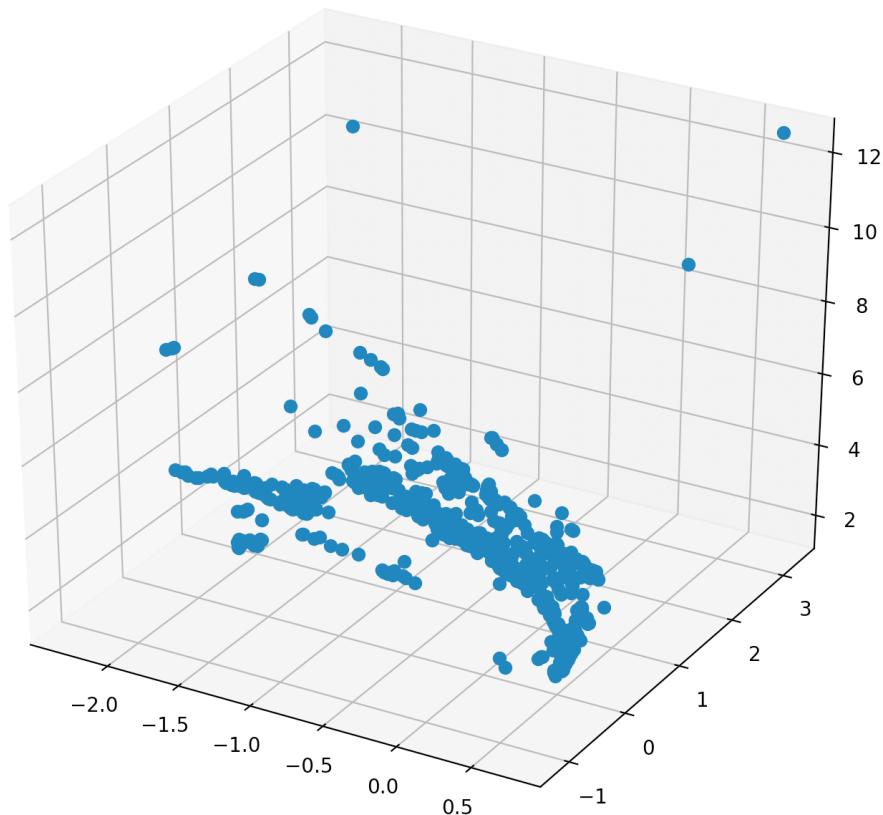
Keypoints for img1 and img2



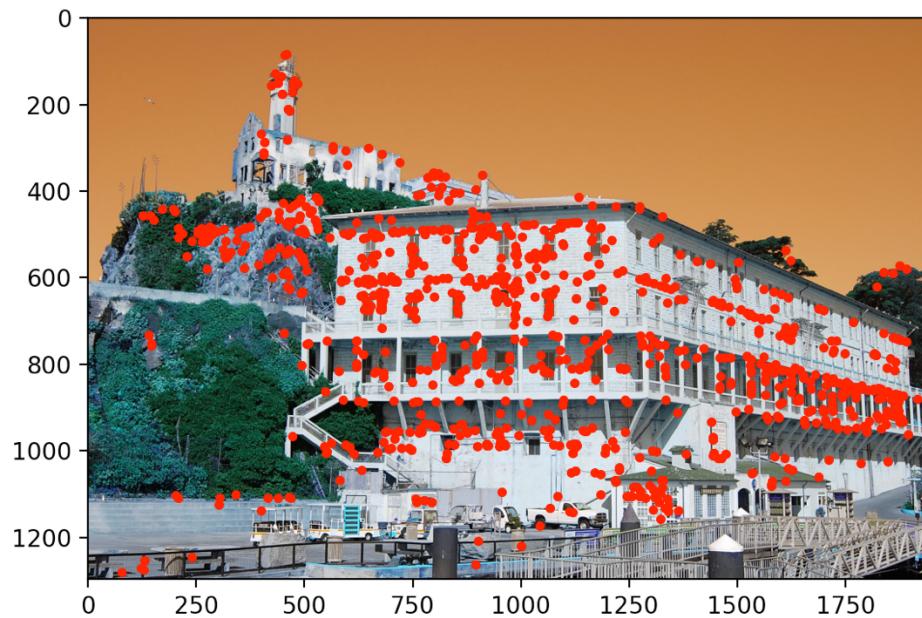
20 matches, crosscheck for img1 and img2



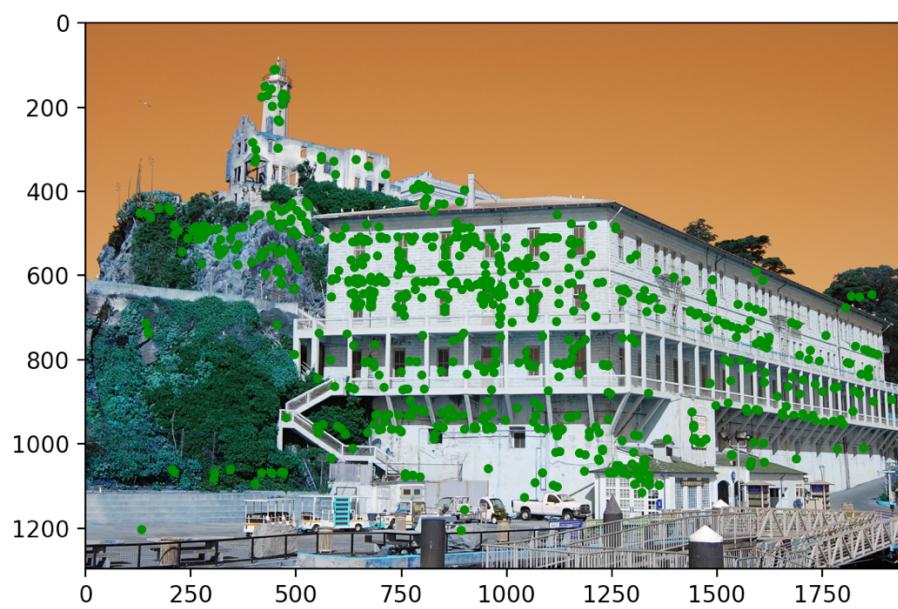
3D reconstructed image



Original image coordinates using SIFT



Projecting X with camera matrix P2 on img2



The reconstructed image coordinates are very similar to the original image coordinates.