

Homework 3 - Stereo Calibration and Rectification

Task 1

Testing Sequence

Left camera_matrix: $\begin{bmatrix} 1153.37974 & 0 & 3.11694365e+02 \\ 0 & 1.15228844e+03 & 2.48562879e+02 \\ 0 & 0.00000000e+00 & 1.00000000e+00 \end{bmatrix}$

Left distortion_coefficients:

$[-2.59777428e-01, 4.68437283e-01, 1.04607310e-03, -1.11498765e-04, -1.86357076e+00]$

Right camera_matrix: $\begin{bmatrix} 1.14987320e+03 & 0.00000000e+00 & 3.25694021e+02 \\ 0.00000000e+00 & 1.14821508e+03 & 2.24352913e+02 \\ 0.00000000e+00 & 0.00000000e+00 & 1.00000000e+00 \end{bmatrix}$

Right distortion_coefficients:

$[-2.94379984e-01, 1.10603138e+00, -1.29307826e-03, -1.41937300e-03, -9.97747184e+00]$

Parameters from Taken Images

left_matrix: $\begin{bmatrix} 1.70161319e+03 & 0.00000000e+00 & 3.33173005e+02 \\ 0.00000000e+00 & 1.70528118e+03 & 2.53983192e+02 \\ 0.00000000e+00 & 0.00000000e+00 & 1.00000000e+00 \end{bmatrix}$

Left distortion_coefficients:

$[-4.80235204e-01, -1.72878847e+00, 5.77813860e-04, -1.23207255e-03, 3.61628567e+01]$

Right camera_matrix: $\begin{bmatrix} 1.69869496e+03 & 0.00000000e+00 & 3.46108534e+02 \\ 0.00000000e+00 & 1.70293776e+03 & 2.44668622e+02 \\ 0.00000000e+00 & 0.00000000e+00 & 1.00000000e+00 \end{bmatrix}$

Right distortion_coefficients:

$[-5.02060212e-01, -1.63274629e-01, 1.40040077e-03, -1.85247699e-03, 7.74400554e+00]$

Task 2

Testing Sequence

rotation: $[[0.99927197, -0.01004393, -0.03680551],$

[0.01072266, 0.99977522, 0.01829018],
[0.03661353, -0.01867152, 0.99915505]]

translation:

[[-11.65910936]
[-0.53291932]
[-1.79708006]]

essential matrix:

[[-2.42584262e-04 , 1.80662653e+00, -4.99600107e-01]
[-1.36889060e+00, -1.99643549e-01 , 1.17154005e+01]
[4.07514712e-01 , -1.16618413e+01, -2.32861607e-01]]

fundamental:

[[-3.34483059e-09, 2.49339452e-05, -1.41418383e-02]
[-1.89019648e-05, -2.75933611e-06, 1.93158612e-01]
[1.07028748e-02, -1.92573336e-01, 1.00000000e+00]]

Parameters from Taken Images

rotation:

[[0.99991353, 0.00143658, -0.01307186]
[-0.00135343, 0.99997881, 0.00636752]
[0.01308073, -0.00634928, 0.99989428]]

translation:

[[-20.32878997]
[-0.03417549]
[-0.86047233]]

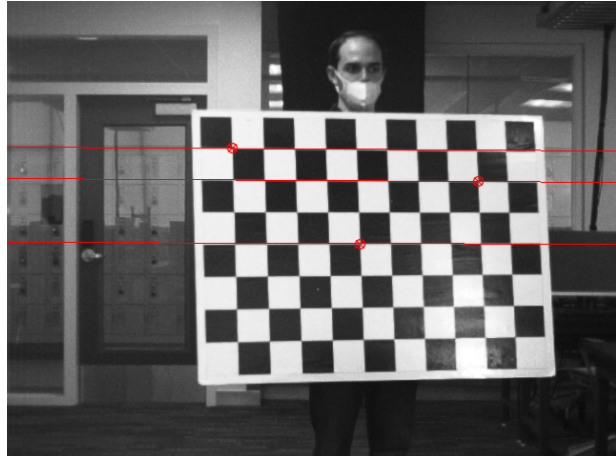
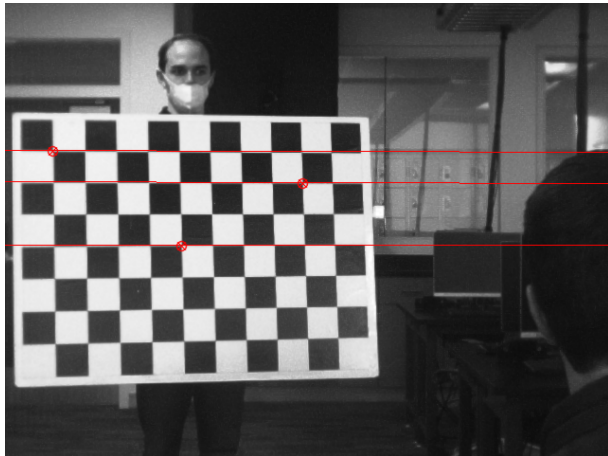
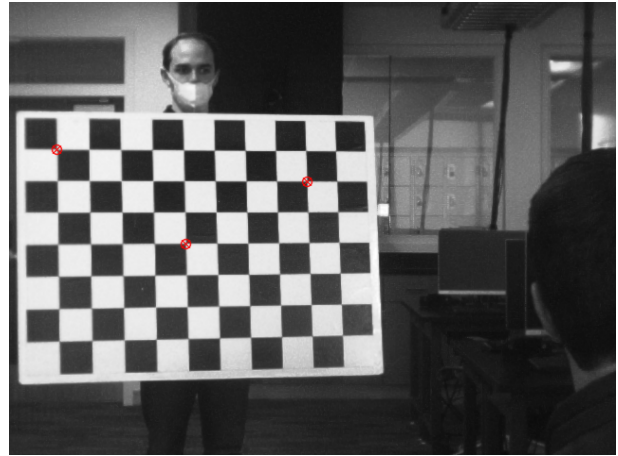
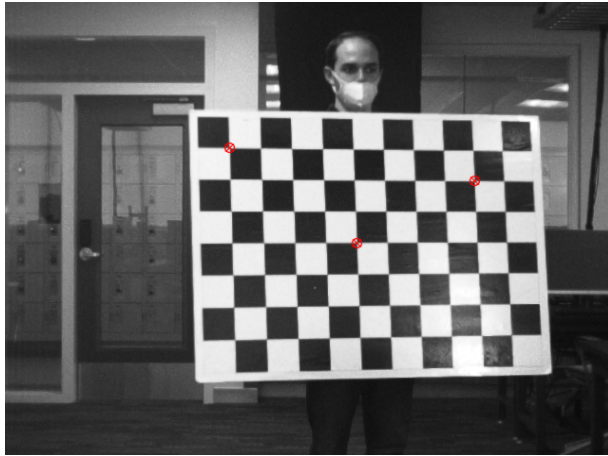
essential matrix:

[[-1.61162771e-03, 8.60671088e-01, -2.86927983e-02]
[-5.94482497e-01, -1.30309263e-01, 2.03378889e+01]
[6.16860850e-02, -2.03283101e+01, -1.29890712e-01]]

fundamental:

[[2.32961573e-08, -1.24142825e-05, 3.85101138e-03]
[8.57186374e-06, 1.87489228e-06, -5.02334810e-01]
[-3.62001355e-03, 5.01920236e-01, 1.00000000e+00]]

Task 3



Task 4

