

Week 10 Lab

Upasana Mahanti

Part 0

Calibration Matrix:

$\begin{bmatrix} 723.9358306 & 0.51407449567 \end{bmatrix}$

$\begin{bmatrix} 0.73455476617 & 293.31576841 \end{bmatrix}$

$\begin{bmatrix} 0.0 & 0.0 & 1.0 \end{bmatrix}$

Distortion Coefficients:

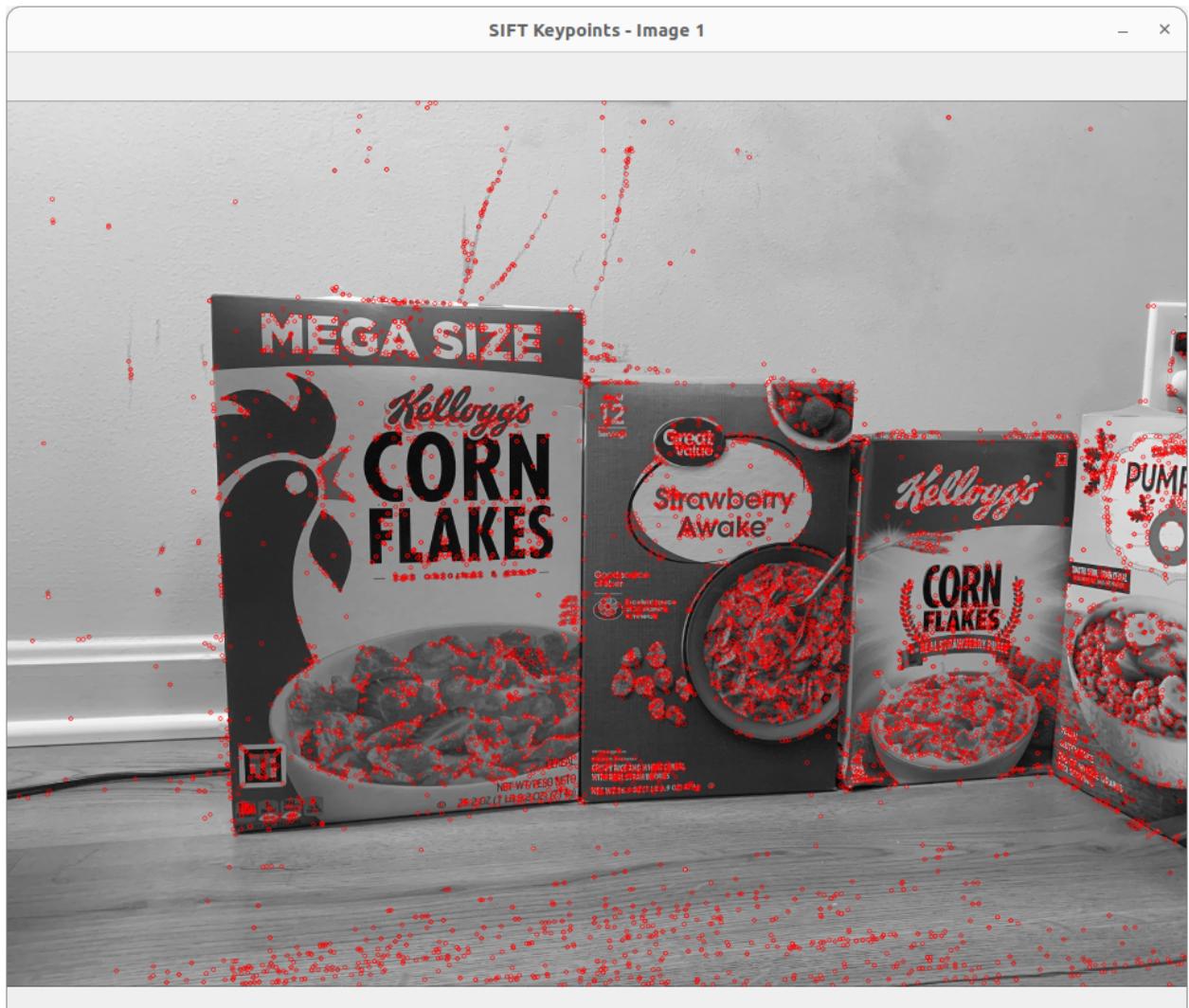
$\begin{bmatrix} 0.00977234 & -0.13459383 & -0.00141922 & 0.00123659 & 0.20566705 \end{bmatrix}$

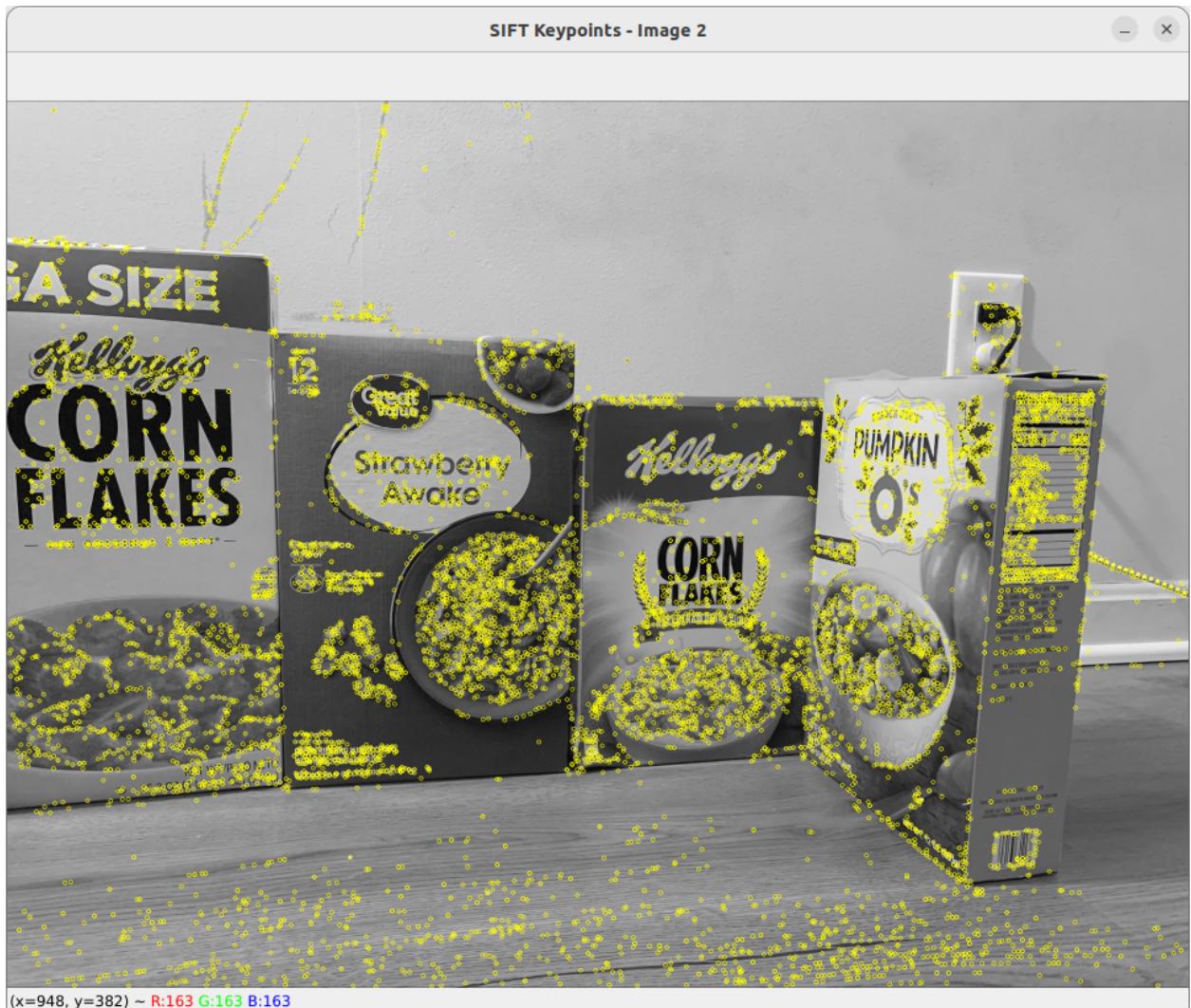
Part 1





Part 2





Part 3

Constraint 1752: 0.039927347556621307

Part 4

Fundamental Matrix : [[-2.17700364 -2.55327416 3.13110571]
[2.02086107 -0.99059703 -1.31294781]
[-1.82863536 1.29297284 1.]]

Determinant of E: 0.0

Essential Matrix : [[-2.17700364e+00 -2.51636330e+00 4.12395069e+03]
[2.05050374e+00 -9.90597028e-01 -1.72798602e+03]
[-7.29650674e-01 -2.18069225e+00 2.24023952e+03]]

Part 5

Rotation Matrix R1:

[[-0.0799961 -0.98824005 -0.13031585]
[-0.43720712 0.15227444 -0.88637601]
[0.89579605 -0.01393161 -0.44424695]]

Rotation Matrix R2:

[[-0.88225452 0.45261641 0.12948105]
[-0.10211573 -0.45248113 0.88590812]
[0.45956428 0.7683744 0.44542278]]

Translation Vector T:

[[0.55064046]
[0.30862332]
[-0.77559444]]

Part 6 & 6.5

Projection Matrix P0:

[[1. 0. 0. 0.]
[0. 1. 0. 0.]
[0. 0. 1. 0.]]

Projection Matrices for Camera 1:

P1: [[4.02593858e+02 -7.22584269e+02 -3.22716336e+02 -8.49634081e-02]
[-5.84014681e+01 1.07767557e+02 -7.81396357e+02 -7.93347494e-01]]

[8.95796047e-01 -1.39316080e-02 -4.44246950e-01 -7.75594439e-01]]

P2: [[4.02593858e+02 -7.22584269e+02 -3.22716336e+02 8.49634081e-02]
[-5.84014681e+01 1.07767557e+02 -7.81396357e+02 7.93347494e-01]
[8.95796047e-01 -1.39316080e-02 -4.44246950e-01 7.75594439e-01]]

P3: [[-4.02445384e+02 7.22666915e+02 3.22716465e+02 -8.49634081e-02]
[5.97878521e+01 -1.06995846e+02 7.81397560e+02 -7.93347494e-01]
[4.59564285e-01 7.68374396e-01 4.45422782e-01 -7.75594439e-01]]

P4: [[-4.02445384e+02 7.22666915e+02 3.22716465e+02 8.49634081e-02]
[5.97878521e+01 -1.06995846e+02 7.81397560e+02 7.93347494e-01]
[4.59564285e-01 7.68374396e-01 4.45422782e-01 7.75594439e-01]]

Part 7 & 7.5:

Number of triangulated points: 1752

Part 8

Mean Re-projection Error for Camera 1: 214.59795145802025

Mean Re-projection Error for Camera 2: 7.826880916134527

Part 9

Dominant Colors for Image 1:

[[150 129 107]
[188 170 149]
[127 50 24]
[213 202 185]
[29 40 16]]

Dominant Colors for Image 2:

[[209 194 175]
[145 63 22]
[143 119 95]
[68 31 20]
[176 159 137]]

Part 10

