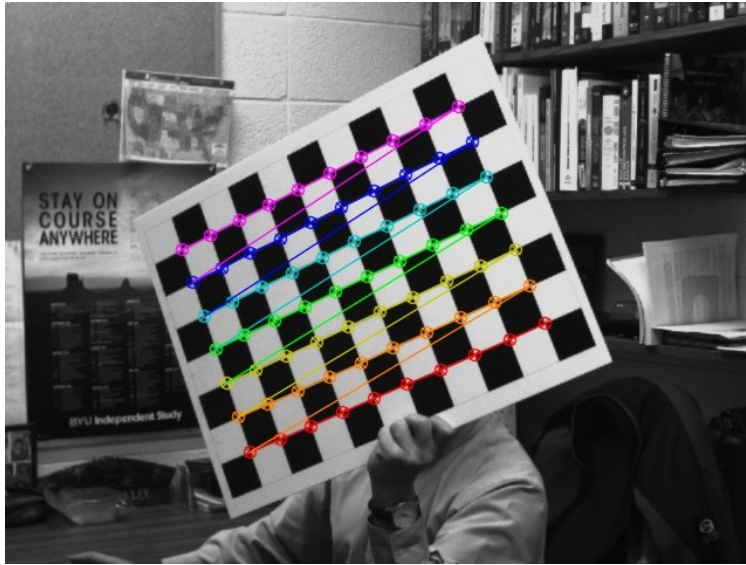


Task 1 – Corner Detection



Task 2 – Intrinsic Parameters

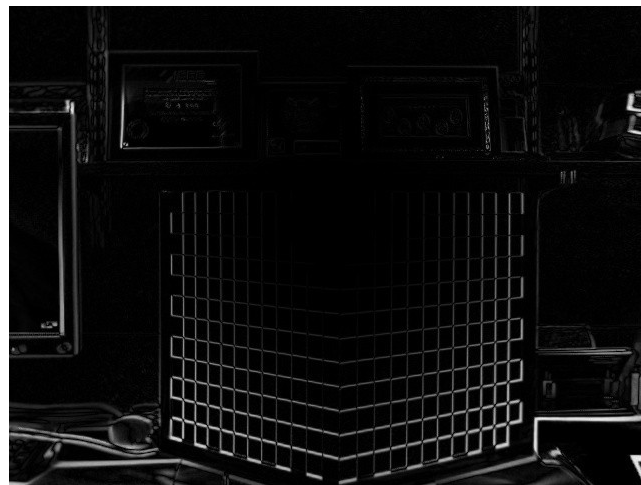
Calculated focal length: 8.48mm

Intrinsic parameters: $\begin{bmatrix} 1145.05898, 0.00000000, 328.612905 \\ 0.00000000, 1.14344385, 222.325254 \\ 0.00000000, 0.00000000, 1.00000000 \end{bmatrix}$

Distortion parameters: $\begin{bmatrix} -0.254256031 \\ -0.053261965 \\ -0.001409690 \\ -0.001437376 \\ 2.28132168 \end{bmatrix}$

Task 3 – Distortion Correction





Task 4 – Object Pose Estimation

R: $\begin{bmatrix} 0.73551327 & -0.67738374 & 0.0130958 \\ -0.00323282 & -0.02283801 & -0.99973395 \\ 0.67750261 & 0.73527525 & -0.01898752 \end{bmatrix}$

Euler Angles: $\begin{bmatrix} 1.51392294 \\ -0.57974373 \\ 0.58824618 \end{bmatrix}$

Translation: $\begin{bmatrix} -1.95992139e-02 \\ 1.04877854e+01 \\ 4.67009922e+01 \end{bmatrix}$

Task 5 – My Camera's Intrinsic Parameters

Focal length is 10.88 mm (based on the 135 pix/mm, couldn't find a datasheet for mine)

Camera Matrix: $\begin{bmatrix} 1.46831591e+03 & 0.00000000e+00 & 6.13104006e+02 \\ 0.00000000e+00 & 1.40684920e+03 & 4.59626663e+02 \\ 0.00000000e+00 & 0.00000000e+00 & 1.00000000e+00 \end{bmatrix}$

Distortion: $\begin{bmatrix} 0.04017643 \\ 0.87701138 \\ -0.00515214 \\ -0.00955139 \\ -3.39992284 \end{bmatrix}$

Task 6 – Distortion Correction on My Camera

My camera has a plastic lens and is pretty cheap. Here's what I got!

