

Basic matrix operations

Why lens

What is depth of field, how do you affect it

Lambertian surface

Basic camera projection equations from 3d to 2d

Homogeneous co-ordinates - creating projection matrix

Characteristics of Rotation matrices

Entire projection matrix - from World co-ordinate to camera co-ordinate frame to camera co-ordinates to pixel co-ordinates

Each step in creating the projection matrix $p = K [R | T] P$

Camera calibration matrix

Intrinsic parameters, extrinsic parameters, units

Nothing on orthographic, weak perspective and non-linear calibration

Gaussian Noise and Impulse (Salt and pepper) Noise

Filter, Linear Filter, Non-Linear filter

Linear filter convolution -for removing noise and enhancing edges

Separable, non separable convolutions, complexity

Non-linear filter, median

Edges - possible causes

Edge detection steps - same for all types

Derivates in x, and y and convolution implementations

Simple edge detection is one version - steps

Canny edge detection - steps, non maxima suppression and hysteresis thresholding

Corners - Harris eigenvalue analysis

Invariance of corners - what does invariance mean and what are types of invariance

Invariance of Harris and Sift corners

Homography when it applies, two conditions - understand the derivations for these conditions from the projection matrix

Homography - one to one, what is degrees of freedom and why?

Hough transform (HT) - line parameterization change

Basic algorithm and pseudo-code

Applying to things other than lines

Nothing on the probabilistic HT