

estimate\_K\_ax - Estimate internal camera parameters from homography between two image

Usage:

[K, f\_length, fval] = estimate\_K\_ax(P)

Input:

R: 3x3 Homography Matrix

Output:

K - Calibration matrix of the form

$$\begin{bmatrix} a & 0 & 0 \\ 0 & a & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

Where:

a = focal length of the camera (the pixels are supposed to be squared, i.e.  $ax=ay$ )

f\_length - focal length of the camera

fval - minimum value of the function found by the minimization algorithm. The function that is minimized is

$D = \text{inv}(K) * P * K * (\text{inv}(K) * P * K)' - I$

Where:

K = Calibration Matrix

P = Homography Matrix

I = Identity Matrix