Universität Stuttgart

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Computer Vision

Assignment 1: Projective Transformation: Image alignment by estimation of a homography

For the image pairs of two different scenes (Building facade, seminar room) perform the following steps

a) Measure for each image pair the pixel coordinates of 5 identical points interactively using MATLAB-commands imtool or getline.
b) Compute the homography H as well as the respective error between measured and transformed point coordinates.
c) Use Transformation H to map one image to the geometry of the other. During implementation MATLAB commands `meshgrid` and `reshape` can be used to transform between the standard representation of an image by a 2D matrix and a representation using vectors of homogenous coordinates (see lecture slides). For interpolation use the command `interp2`. To limit the effort for data processing, colour images can be transformed greyscale by `rgb2gray` while their size can be reduced by `imresize`
d) Generate a “panorama image” by simply averaging greyscale (or colour) the images/channels involved

To be delivered is MATLAB-code as well as documentation of the different processing steps including formulas as pdf-Document.

Assignement due till December 11 2019

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