

ECE 661: Homework 2

due September 19

This homework is an exercise in the calculation of vanishing points, vanishing lines, and the coefficients of affine distortion in images of flat scenes that exhibit large perspective effects.

As with the previous homework, use your digital camera to take a photograph of a scene that is mostly planar. This could be a picture of a wall with some interesting looking wall hangings. Make sure you take the picture from such an angle as to accentuate the perspective distortion in the image.

As discussed in class, you will have to interact with the image so that the computer knows as to which lines and points to use for the calculation of vanishing points and lines. For this you can use the same approach as before: place your mouse pointer on the points of interest and record the pixel coordinates of those points.

From the estimated vanishing line, compute the inverse transform for the image that will eliminate the purely projective distortion.

Subsequently, from a pair of lines that are at 90 degrees, compute the coefficients of the affine distortion in the image. Now show a distortion-free image by inverting the affine distortion.