

CMPS 260
Metric Rectification
Assignment 2
Target Date: May 4, Thursday, 10:00am

Form groups of 1 or 2. If you need to identify corners or point correspondences in the images, you can do so by clicking at the image or hand computing them on a piece of paper. In other words, the accuracy or the quality is not important for this assignment. I am looking for the proof-of-concept. Create a brief (2-5page) report including the images, showing all intermediate steps, and all the computed numbers and images in the intermediate stage.

Metric Rectification of a 2D Planar Scene (using geometry):

Pick an outdoor scene with plenty of geometric information (such as parallel lines, orthogonal lines, rectangles and squares). Alternatively, you can also create a man-made geometric scene with chessboard patterns, tiles etc. Take an image I_1 of the plane with a camera so that the parallel lines converge not too far in the image. Use any one of the following methods to create a metric construction of this image.

First Method: Create an affine rectification I_2 of the image. Then, create a metric rectification I_3 using orthogonal lines.

Second Method: Create a direct metric rectification using 5 orthogonal lines.

Third Method: Create an affine rectification I_2 of the image. Use aspect ratio to correct for non-isotropic scaling. Use orthogonality to correct for skew distortion.