ECE 661 Homework 4

Due: 10/16/2008 Thursday (before the class)

In all of the homework assignment so far, you have manually chosen the corresponding pixels in two images for the purpose of estimating the homography between the images.

The goal of the present homework is to eliminate the manual selection of the corresponding pixels by using the RANSAC algorithm for doing the some automatically. Your implementation should closely follow the first three steps of Algorithm 4.6 on page 123 of the textbook. For the fourth step, use all inlier correspondences for refining the previously obtained estimate for the homography. Use just the DLT for this refinement step. Note that before you compute the homography, the data normalization should be carried out as mentioned in Algorithm 4.2 on page 109 of the textbook.

With the best correspondences selected by the RANSAC algorithm, your solution should show which points are extracted and matched between the two images by highlighting them with points and lines. The format of the output display should be same as mentioned in Homework 3. Feel free to look at the solution of the RANSAC algorithm posted at 'cobweb.ecn.purdue/~kak/courses-i-teach/ECE661/index.html', but the code you turn in must be your own.

Show your results on at least two pairs of images from your own camera. And, demonstrate the accuracy of the calculated homography by showing a three-panel display of images consisting of the domain image, the range image, and transformed range image.

Notes.

- Clearly identify the steps you have taken to solve the problem with your own words.
- Your grade depends on the completeness and clarity of your work as well as the result.