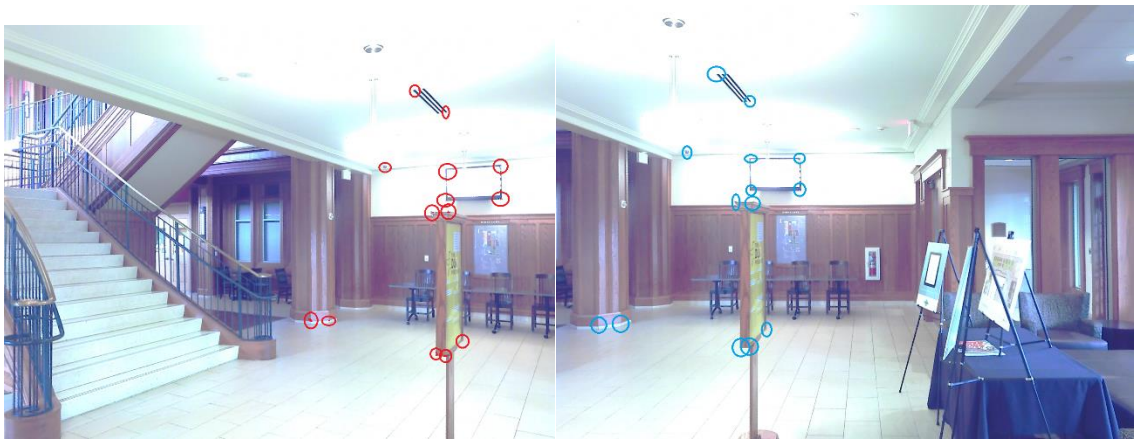
Part1

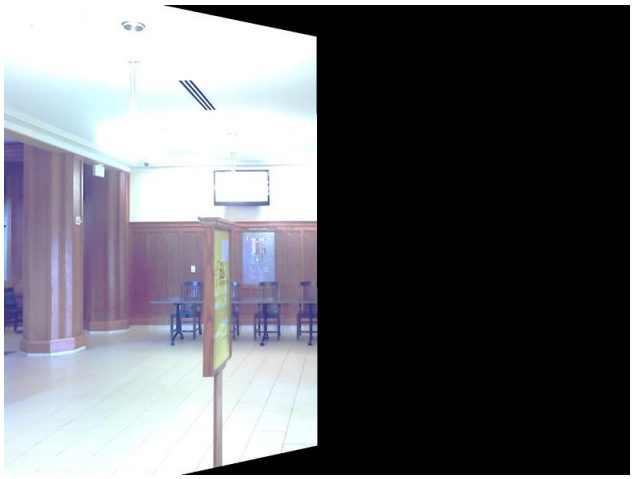
I used same matrix form from problem3 and by using that matrix, making singular value decomposition, I used the last column of V to get h matrix and formed H as a matrix. For norm p1, p2 to make p1, p2 normalized, I divided each in m which is max(|p1|,|p2|).

Part2

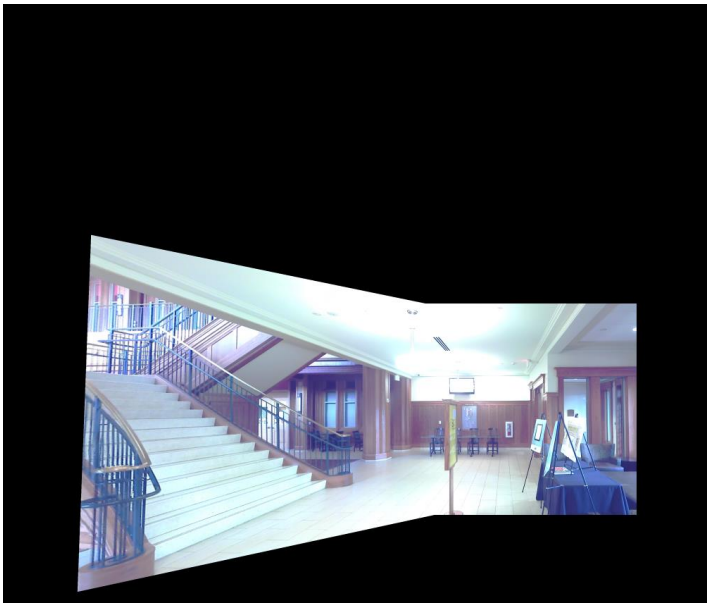
For the set_cor_mosaic I chosed points which seemed to have lots of feature (points with big gradients). Usually I picked corner points of subjects in pictures. Picture Below is point I selected. I totally selected 14 coordinates.



For Image warping, I used H inverse to not make empty point. For all coordinates in ref frame, I checked for if (x2 y2 1) -> H-1 -> makes valid coordinates at porto1 and if so, I added picture there. After making inverse matching, I used bilinear interpolation for more detailed image, and earned results successfully.



For Image merge, I made 3400*4000 picture with making origin of porto2 at the center of square. Then added picture1, and picture 2. I used same algorithm (inv matrix) at this problem too. But simply did the porto1 transition first so that porto2 can overlap common parts.



Part3.

I selected 4corner from picture and get input coordinates from picture. For the output coordinate, I used ratio of Iphone X for more detailed image. (1:2) Than Selected 4 points.