Computation of HOMOGRAPHY using RANSAC

References:

1. Digital Video Processing (http://10.6.4.152/dvp/dvp.html), Computer Sc., Indian Institute of Technology, Madras.

2. VLFEAT SIFT Tool box (http://www.vlfeat.org/overview/sift.html)

3. RANSAC algorithm with example of finding homography : Edward Wiggin. MATLAB Central 2011.


```
function H = RANSAC(sift_match_points_f1, sift_match_points_f2)
lmax = size(sift_match_points_f1, 2);
C = 0;

while C < 0.85*lmax
% Picking the Random points (4 Nos)
    ind = randIndex(lmax, 4);
    pts1 = sift_match_points_f1(:,ind);
    pts2 = sift_match_points_f2(:,ind);

% Compute the HOMOGRAPHY
    H = solveHomo(pts1,pts2);

% Compute the residual for rest of points (lmax - 4)
    remain_pts = H*[sift_match_points_f1;ones(1,lmax)];
    norm_remain_pts = [remain_pts(1,:)./remain_pts(3,:);...
                       remain_pts(2,:)./remain_pts(3,:);ones(1,lmax)];

    distance_ransac  = norm_remain_pts - [sift_match_points_f2;...
                                                        ones(1,lmax)];

    magnitude_distance = sqrt(sum(distance_ransac.^2,1));
    myRansacLogic = magnitude_distance < 10;
    C = size(find(myRansacLogic),2);

end
```

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