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% y - a matrix which represents the set of points Y
% the coordinates of the points are rows in
% matrix y;
%
% Output arguments:
% x1 - a matrix which represents the transformed set
% of points obtained from the set X, the
% coordinates of the points are rows in
% matrix x1;
% y1 - a matrix which is equal to the input matrix y;
% A - a matrix of the rotation
% r - the delation number
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% BEGIN
% checking the dimensionality of the sets x and y [m,n] = size(x); [p,q] = size(y);
    if (m ~= p)
        error('The number of points in the two sets must be equal');
    end
% step 1
if n < q
    z = zeros(m,q-n);
    x = [x,z];
end if n < q
    z = zeros(m,n-q);
    y = [y,z];
end

% mean subtracting
t = sum(x)/m ; for i = 1:m, x(i,:) = x(i,:) - t; end t = sum(y)/m;
for i = 1:m, y(i,:) = y(i,:) - t; end

% step 2 - rotation matrix
A = ((x'*y*y'*x)^(1/2))*(inv(y'*x));

% step 3 - delation number
r = (trace(x*A*y'))/(trace(x'*x));

% Results - rotation of the matrix x
x1 = ((A'*x').*r)'; y1 = y;

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