```matlab
% ---- Geometric Transformations Demo (MATLAB Online ready) ----

% 1. Read a reliable built-in image available in MATLAB Online
img = imread('cameraman.tif');

figure('Name','Geometric Transformations','NumberTitle','off');

subplot(2,3,1);
imshow(img);
title('Original');

% 2. Translation
tform_translate = affine2d([1 0 0; 0 1 0; 50 30 1]);
translated = imwarp(img, tform_translate);
subplot(2,3,2);
imshow(translated);
title('Translate (50,30)');

% 3. Rotation
tform_rotate = affine2d([cosd(30) sind(30) 0; -sind(30) cosd(30) 0; 0 0 1]);
rotated = imwarp(img, tform_rotate);
subplot(2,3,3);
imshow(rotated);
title('Rotate (30°)');

% 4. Scaling
tform_scale = affine2d([1.5 0 0; 0 1.5 0; 0 0 1]);
scaled = imwarp(img, tform_scale);
subplot(2,3,4);
imshow(scaled);
title('Scale (1.5×)');

% 5. Shear / general affine
tform_affine = affine2d([1 0.3 0; 0.2 1 0; 0 0 1]);
affine_img = imwarp(img, tform_affine);
subplot(2,3,5);
imshow(affine_img);
title('Affine (shear)');

% 6. Projective (perspective) transform
input_points  = [1 1; size(img,2) 1; size(img,2) size(img,1); 1 size(img,1)];
output_points = [1 1; size(img,2)-50 40; size(img,2)-30 size(img,1)-20; 20
size(img,1)];

tform_proj = fitgeotrans(input_points, output_points, 'projective');
projective_img = imwarp(img, tform_proj);

subplot(2,3,6);
imshow(projective_img);
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title('Projective');
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Original

Translate (50,30)

Rotate (30°)

Scale (1.5×)

Affine (shear)

Projective