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% ---- IMAGE GEOMETRY PRIMITIVES DEMO (MATLAB Online) ----

% 1. Use a built-in online compatible image
img = imread('peppers.png');  % reliably available in MATLAB Online
gray_img = rgb2gray(img);     % grayscale for geometry illustration

figure('Name','Image Geometry Primitives','NumberTitle','off');

% Display original image
subplot(2,3,1);
imshow(img);
title('Original RGB');

% 2. Points (mark specific pixel locations)
subplot(2,3,2);
imshow(gray_img); hold on;
plot(100, 150, 'ro', 'MarkerSize', 10, 'LineWidth', 2);
plot(200, 250, 'go', 'MarkerSize', 10, 'LineWidth', 2);
title('Points');

% 3. Lines
subplot(2,3,3);
imshow(gray_img); hold on;
line([50 200], [50 200], 'Color', 'y', 'LineWidth', 3);
line([30 250], [200 200], 'Color', 'c', 'LineWidth', 3);
title('Lines');

% 4. Curves (parametric circle)
subplot(2,3,4);
imshow(gray_img); hold on;
theta = linspace(0, 2*pi, 100);
x = 150 + 50*cos(theta);
y = 150 + 50*sin(theta);
plot(x, y, 'm-', 'LineWidth', 2);
title('Curves');

% 5. 3D Surface – intensity mesh
subplot(2,3,[5 6]);
mesh(double(gray_img));
% MATLAB Online supports jet, but it's better to avoid forcing colors unless
necessary:
title('Intensity Surface');
xlabel('X'); ylabel('Y'); zlabel('Intensity');
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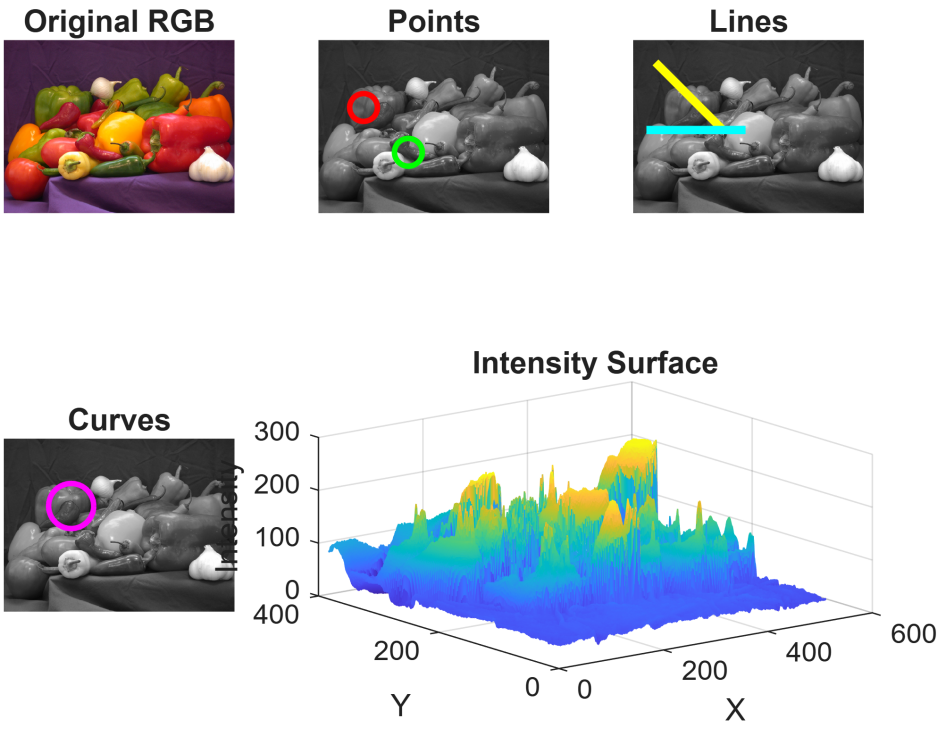
Original RGB
Points
Lines
Curves
Intensity Surface
Intensity
300
200
100
0
400
200
0
Y
0
200
400
600
X