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% Question 2 :- Applying Filters(Step 1: Read the image)
imagePath = 'tree.png';
img = imread(imagePath);

% Convert to grayscale if the image is RGB
if size(img, 3) == 3
    grayImg = rgb2gray(img);
else
    grayImg = img; % If already grayscale
end

% Step 2: Applying Low-Pass Filters
% Gaussian Filter
gaussianFilter = fspecial('gaussian', [5, 5], 2); % 5x5 kernel, sigma=2
filteredGaussian = imfilter(grayImg, gaussianFilter);

% Average Filter
averageFilter = fspecial('average', [5, 5]); % 5x5 kernel
filteredAverage = imfilter(grayImg, averageFilter);

% Step 3: Applying High-Pass Filters
% Laplacian Filter
laplacianFilter = fspecial('laplacian', 0.2); % Laplacian filter
filteredLaplacian = imfilter(grayImg, laplacianFilter);

% Prewitt Filter
prewittFilterX = fspecial('prewitt'); % Prewitt filter for x direction
prewittFilterY = prewittFilterX'; % Prewitt filter for y direction
filteredPrewittX = imfilter(double(grayImg), prewittFilterX);
filteredPrewittY = imfilter(double(grayImg), prewittFilterY);
filteredPrewitt = sqrt(filteredPrewittX.^2 + filteredPrewittY.^2); % Combine
results

% Step 4: Displaying Results
figure;

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

subplot(2, 3, 2);
imshow(filteredGaussian);
title('Gaussian Filter');

subplot(2, 3, 3);
imshow(filteredAverage);
title('Average Filter');

subplot(2, 3, 4);
imshow(filteredLaplacian, []);
```

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title('Laplacian Filter');

subplot(2, 3, 5);
imshow(filteredPrewitt, []);
title('Prewitt Filter');
```