

Importing Image

```
imagePath = '/MATLAB Drive/IMG_3411.JPG';  
image = imread(imagePath);  
  
figure;  
imshow(image);  
title('Original Image');
```

Original Image

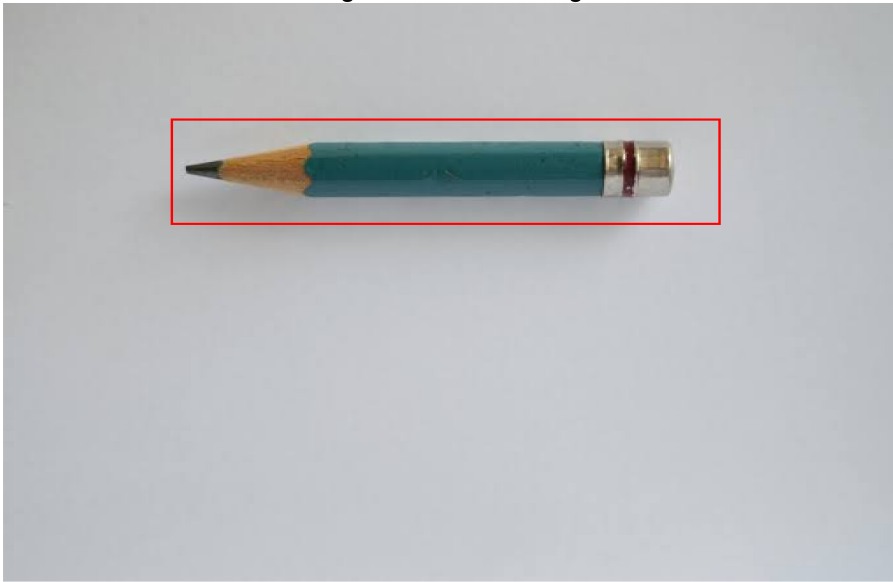


Binary Mask For The Region Of Interest

<https://in.mathworks.com/help/matlab/ref/rectangle.html>

```
x1 = 130;  
y1 = 90;  
x2 = 550;  
y2 = 170;  
  
figure;  
imshow(image);  
rectangle('Position', [x1 y1 x2-x1 y2-y1], 'EdgeColor', 'r', 'LineWidth', 1);  
title('Region Of Interest Image');
```

Region Of Interest Image



```
roiImage = image(y1:y2, x1:x2, :);  
figure;  
imshow(roImage);  
title('Crop ROI Image');
```

Crop ROI Image



Low-pass filters :

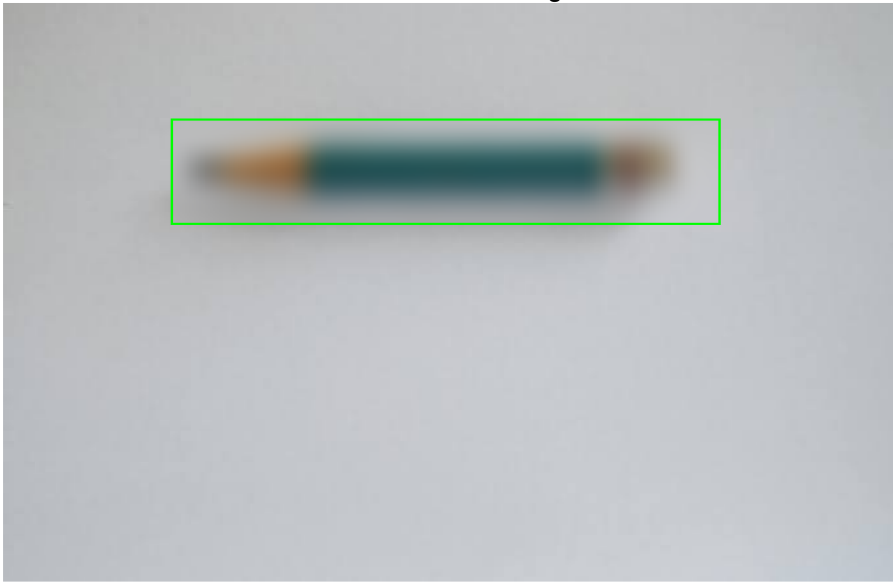
Gaussian and Average filters

<https://in.mathworks.com/help/images/ref/imgaussfilt.html#bunfgk6-1-sigma>

https://in.mathworks.com/matlabcentral/answers/249558-creating-9x9-average-filter-and-applying-it-to-an-image-with-certain-values#comment_887651

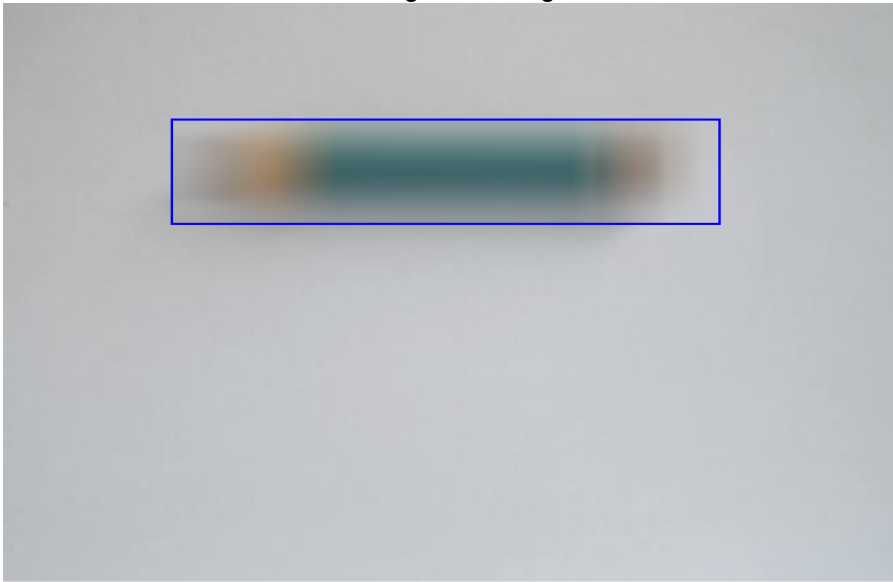
```
GaussianImage = imgaussfilt(roiImage,10);  
figure;  
GaussianOverlayImage = image;  
GaussianOverlayImage(y1:y2, x1:x2, :) = GaussianImage;  
imshow(GaussianOverlayImage);  
rectangle('Position', [x1 y1 x2-x1 y2-y1], 'EdgeColor', 'g', 'LineWidth', 1);  
title("Gaussian filter Image")
```

Gaussian filter Image



```
windowSize = 50;
kernel = ones(windowSize, windowSize) / windowSize ^ 2;
AverageImage = imfilter(roiImage, kernel, 'symmetric');
figure;
averageOverlayImage = image;
averageOverlayImage(y1:y2, x1:x2, :) = AverageImage;
imshow(averageOverlayImage);
rectangle('Position', [x1 y1 x2-x1 y2-y1], 'EdgeColor', 'b', 'LineWidth', 1);
title("Average filter Image")
```

Average filter Image



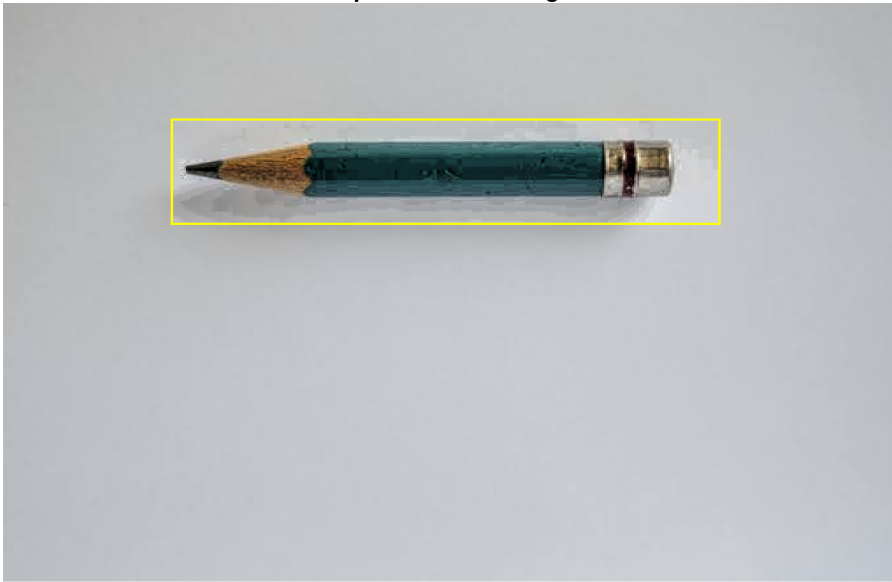
high-pass filters:

Laplacian and Prewitt

<https://in.mathworks.com/help/images/ref/locallapfilt.html>

```
laplacianImage = locallapfilt(roiImage, 0.4, 0.5);  
figure;  
laplacianOverlayImage = image;  
laplacianOverlayImage(y1:y2, x1:x2, :) = laplacianImage;  
imshow(laplacianOverlayImage);  
rectangle('Position', [x1 y1 x2-x1 y2-y1], 'EdgeColor', 'y', 'LineWidth', 1);  
title("laplacian filter Image")
```

laplacian filter Image



```
grayImage=rgb2gray(image);  
grayRoiImage=rgb2gray(roiImage);  
prewittImage=edge(grayRoiImage,'prewitt');  
prewittImageScaled = uint8(prewittImage * 255);  
figure;  
prewittOverlayImage = grayImage;  
prewittOverlayImage(y1:y2, x1:x2, :) = prewittImageScaled;  
imshow(prewittOverlayImage);  
rectangle('Position', [x1 y1 x2-x1 y2-y1], 'EdgeColor', 'y', 'LineWidth', 1);  
title("prewitt filter Image")
```

prewitt filter Image

