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Reset the Program

```
clear all;  
close all;
```

Load the image

Here I am going to read in the image and store it in a variable *img*

```
img = imread('gogol.jpg');
```

Display the image

Show the image with `imshow()`

```
imshow(img)
```



Now I am going to use `image()`

```
image(img)
```



Finally I am going to use `imagesc()`

```
imagesc(img)
```



Resizing the Image

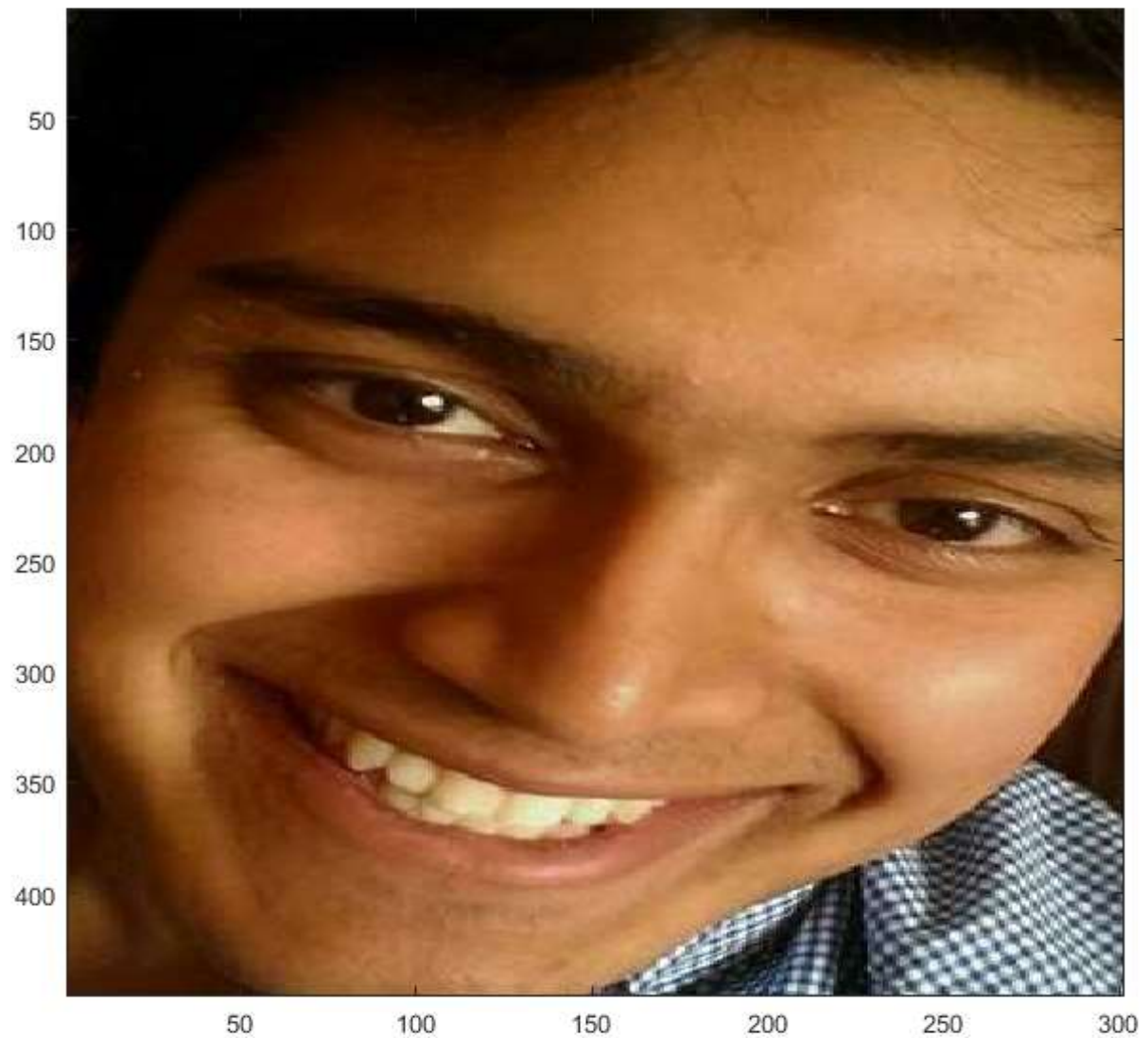
```
resized_img = imresize(img, [256 256]);  
image(resized_img);
```



Cropping face image

Here I am extracting the face from the full image.

```
face_img = img(75:520,100:400,:);  
image(face_img)
```

Replacing Face Region with colored boxes

Create a copy of the image.

```
boxed_face_img = img(:,:,:);
```

Add in the white stripe first

```
boxed_face_img(75:520,100:159,1:3) = 255;
```

Add in the black stripe next

```
boxed_face_img(75:520,160:219,1:3) = 0;
```

Add in the Red stripe next

```
boxed_face_img(75:520,220:279,1) = 255;  
boxed_face_img(75:520,220:279,2:3) = 0;
```

Add in the Blue stripe next

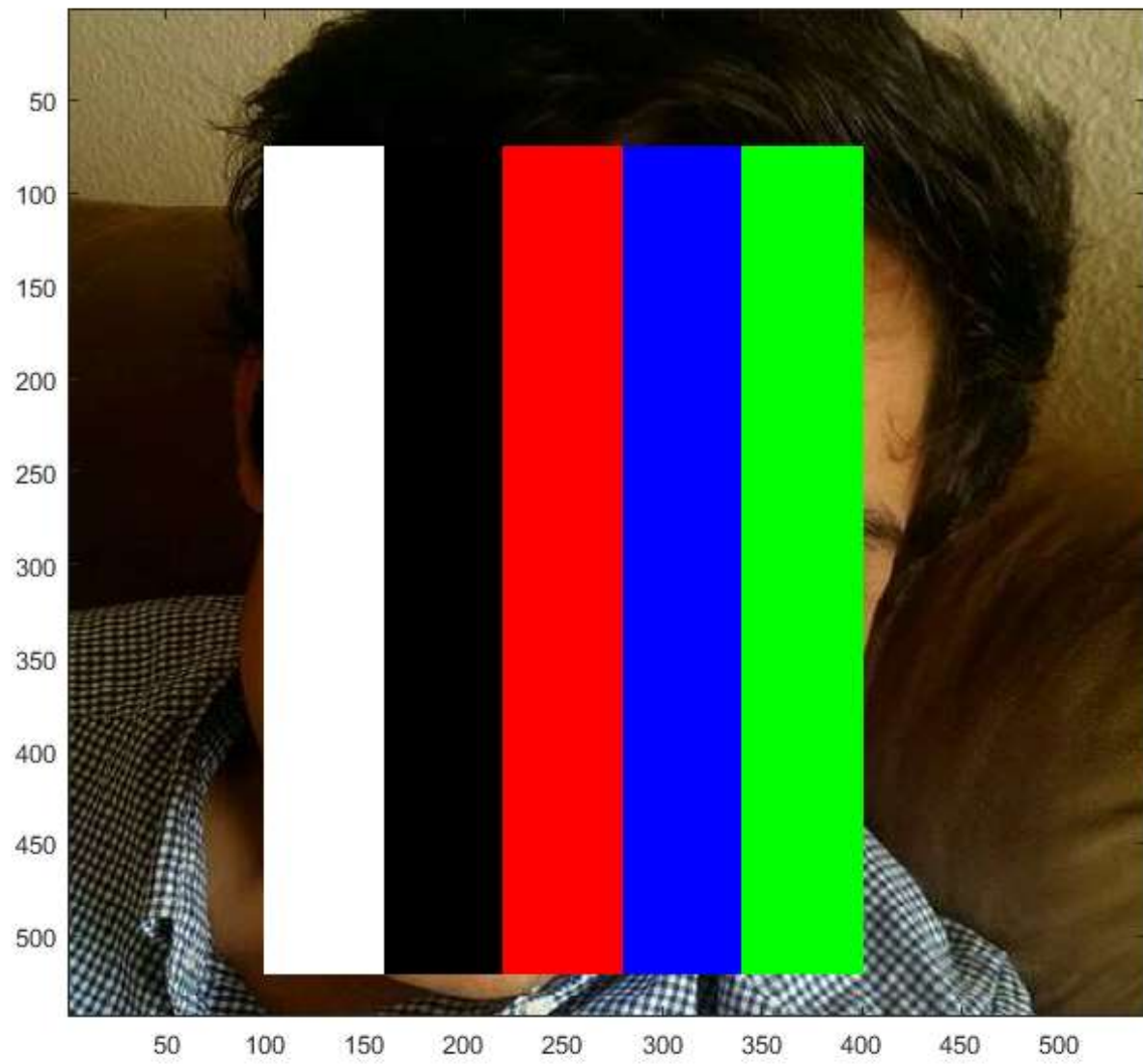
```
boxed_face_img(75:520,280:339,1) = 0;  
boxed_face_img(75:520,280:339,2) = 0;  
boxed_face_img(75:520,280:339,3) = 255;
```

Add in the Green stripe next

```
boxed_face_img(75:520,340:400,1) = 0;  
boxed_face_img(75:520,340:400,2) = 255;  
boxed_face_img(75:520,340:400,3) = 0;
```

Finally show the iamge

```
image(boxed_face_img);
```



Resize face image

```
face_img_resized = imresize(face_img, [64 64]);  
image(face_img_resized);
```




Save Images

Save the resized full image

```
imwrite(resized_img, 'gogol_256.jpg');
```

Save the resized face image

```
imwrite(face_img_resized, 'gogol_face_64.jpg');
```

Histograms of full image

Extract each of the color channels. The channels need to be converted to doubles in order for `hist` to work.

```
full_red = double(img(:,:,1));
```

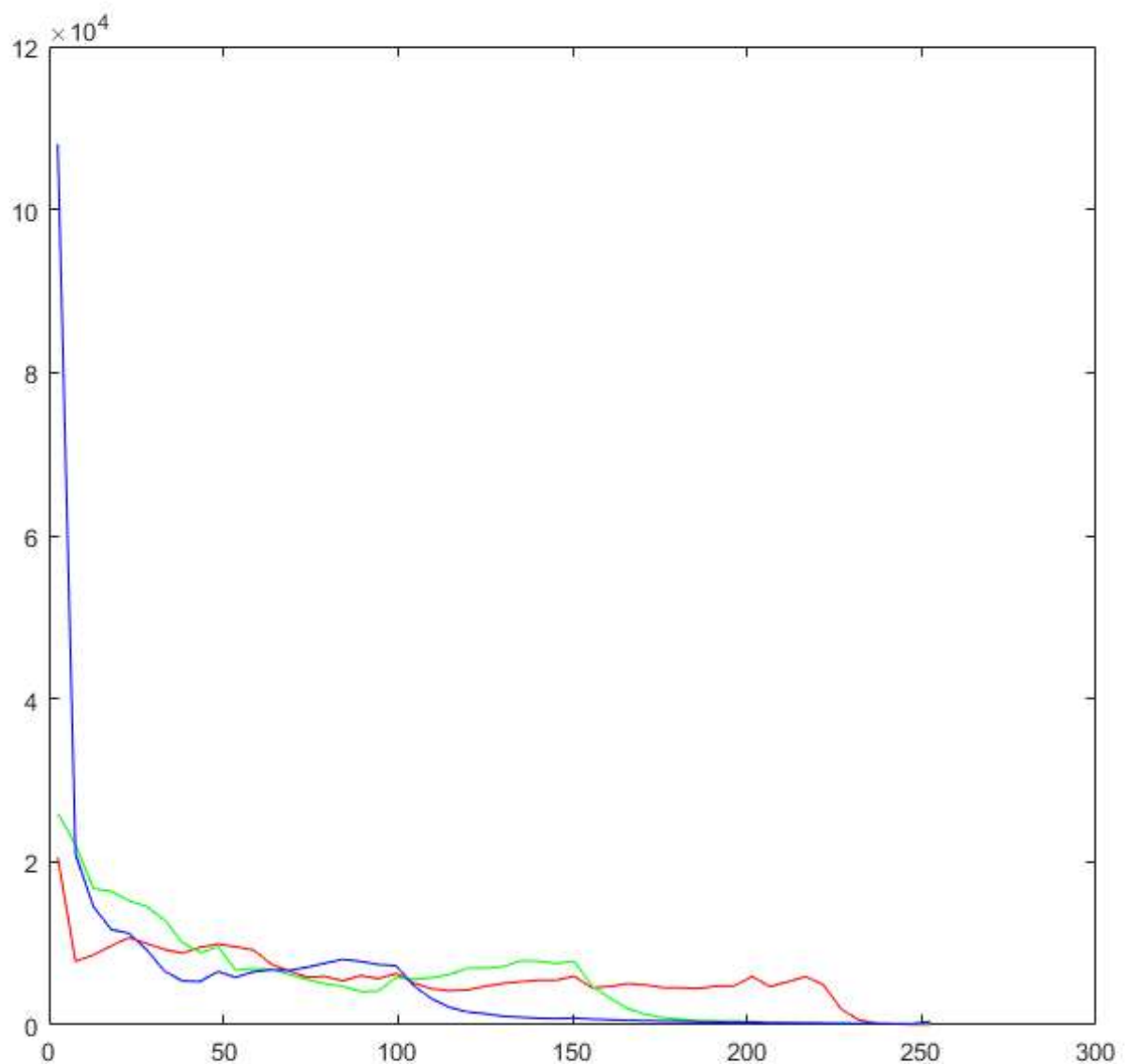
```
full_green = double(img(:,:,2));  
full_blue = double(img(:,:,3));
```

Get the histograms for each. Remembering to convert each matrix to an array

```
nBins = 50;  
[count_red, centers_red] = hist(full_red(:), nBins);  
[count_green, centers_green] = hist(full_green(:), nBins);  
[count_blue, centers_blue] = hist(full_blue(:), nBins);
```

Plot it

```
plot(centers_red, count_red, 'Red', centers_green, count_green, 'Green', centers_blue, count_blue,  
     'Blue');
```



Histograms of face image

Extract each of the color channels again converting it to doubles.

```
face_red = double(face_img(:,:,1));  
face_green = double(face_img(:,:,2));  
face_blue = double(face_img(:,:,3));
```

Get the histograms for each.

```
[count_red_face, centers_red_face] = hist(full_red(:), nBins);  
[count_green_face, centers_green_face] = hist(full_green(:), nBins);  
[count_blue_face, centers_blue_face] = hist(full_blue(:), nBins);
```

Plot it

```
plot(centers_red_face, count_red_face, 'Red', centers_green_face, count_green_face, 'Green', centers_blue_face, count_blue_face, 'Blue');
```

