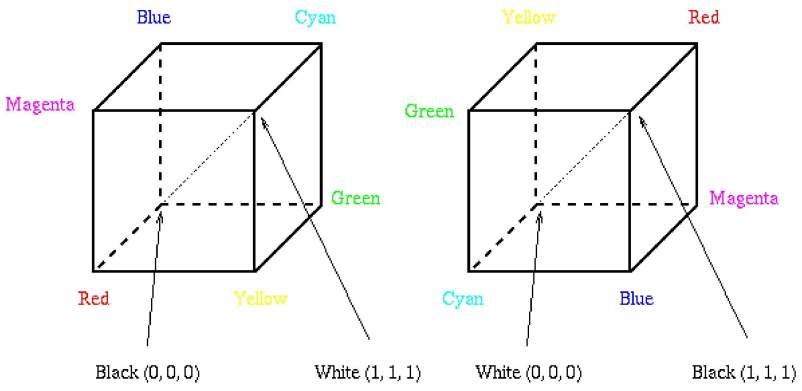
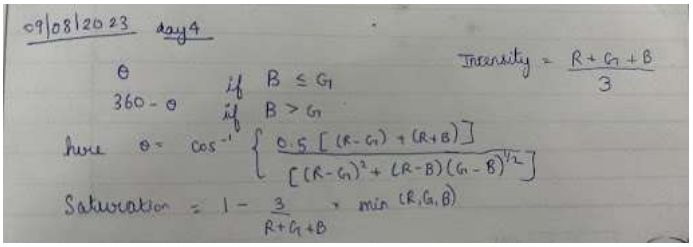
```
# Introduction to Image processing

# Module 2 -  Image processing - digital Image processing
# Feature of the image or information about the image
# Take image as input but in image processing the output is also an image whereas in computer vision the output can be some features/inf
# Image processing o/p - image
# computer vision - feature / information about the image

# Image transformation  - Flipping , rotation and crop

# Color Mapping - Additive Color Model and Subtractive Color Model

# Additive Color Model - Red Green Blue ( Digital Displays) ( combing two lights - using the lights)
# Printer - SUbtractive color Model ( Ceyon Magenta Yellow Black ) ( uses the ink to display the color)

# Computer generally displays rgb using 8-red,green,blue ( 8 for each of them) ->
# Since each bit can be 0 or 1 ->
# thats why 2 power 8 = 256 channels for each of them
```




The RGB Cube  The CMY Cube

```
# HUE or HSL

# 1) Hue : It is a color attribute that describes a pure color
# 2) Saturation : It measures the extent to which a pure color within is diluted by white light ( darkness or whiteness)
# 3) Intensity : Key factor in describing the color sensation p;.
```

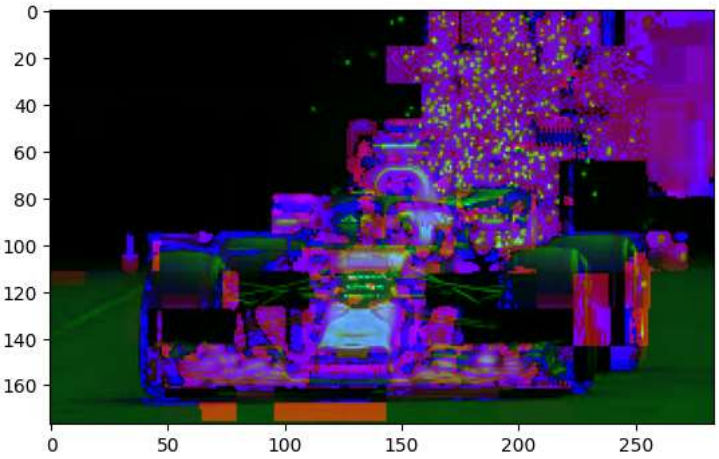



```
import numpy as np
import cv2
import matplotlib.pyplot as plt
%matplotlib inline


img=cv2.imread('/content/randomimage.jpeg')


# converting to different color spaces
img=cv2.cvtColor(img,cv2.COLOR_BGR2RGB)
plt.imshow(img)
```

```
<matplotlib.image.AxesImage at 0x7f040f6a7190>
```

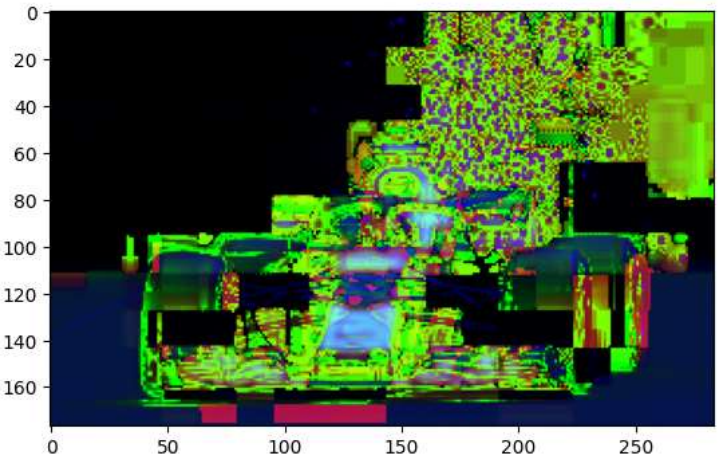
```
# converting to different color spaces BGR to HLS

img1=cv2.cvtColor(img,cv2.COLOR_BGR2HLS)
plt.imshow(img1)
```

```
<matplotlib.image.AxesImage at 0x7f040f6ff130>
```



```
# converting to different color spaces BGR to HSV

img2=cv2.cvtColor(img,cv2.COLOR_BGR2HSV)
plt.imshow(img2)
```

```
<matplotlib.image.AxesImage at 0x7f040f8886d0>
```

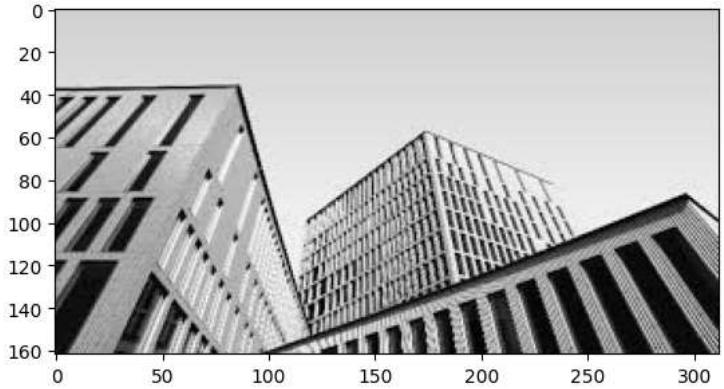


```
# blending - mixing of 2 images -> size should be same for blending
# pasting - one image on the top of another image


img=cv2.imread('/content/randomimage.jpeg')
img1=cv2.imread('/content/b&wimages.jpeg')


plt.imshow(img)
img.shape
```

```
(177, 284, 3)
```

```
plt.imshow(img1)
img1.shape
```

```
(162, 312, 3)
```



```
img=cv2.resize(img,(177,284))
img1=cv2.resize(img1,(177,284))
```

```
img.shape
```

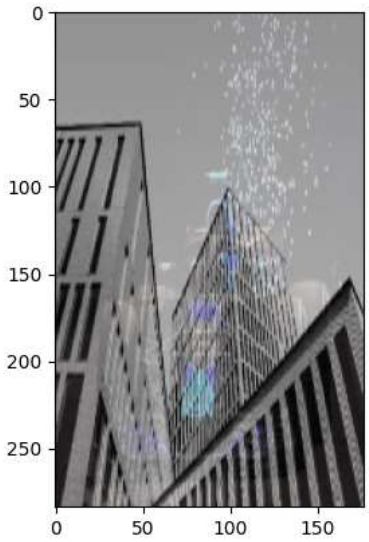
```
(284, 177, 3)
```

```
img1.shape
```

```
(284, 177, 3)
```

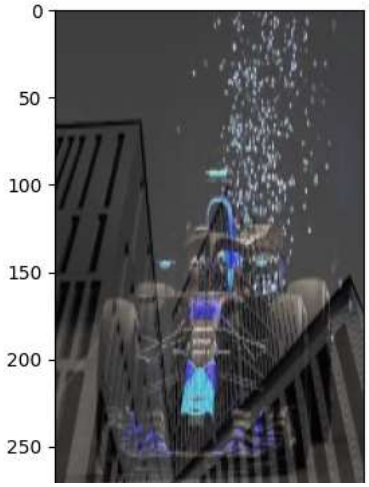
```
blended=cv2.addWeighted(src1=img1,alpha=0.7,src2=img,beta=0.3,gamma=0)
plt.imshow(blended)
```

```
<matplotlib.image.AxesImage at 0x7f040f6fc0d0>
```



```
blended=cv2.addWeighted(src1=img,alpha=0.7,src2=img1,beta=0.3,gamma=0)
plt.imshow(blended)
```

```
<matplotlib.image.AxesImage at 0x7f040f479450>
```

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