

Filters

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Input Image- image1(img)

331X800



Grayscale Function

```
def greyscale(img,s=False):  
  
    v=img*1.0  
  
    grey=img*1.0  
  
    b,g,r= v[:, :,0], v[:, :,1], v[:, :,2]  
  
    grey=b*.1 + g*.7 + r*.2  
  
    if s==True:  
  
        show(grey)  
  
        return grey  
  
    return grey
```

Original Picture



Grayscale Picture



Blackwhite Function

```
def blackWhite(img,threshold=128,s=False):
```

```
    bl=img[:, :, 1]*1.0
```

```
    bl[bl<=threshold]=0
```

```
    bl[bl>threshold]=255
```

```
    if s==True:
```

```
        show(bl)
```

```
        return bl
```

```
    return bl
```

Original Picture

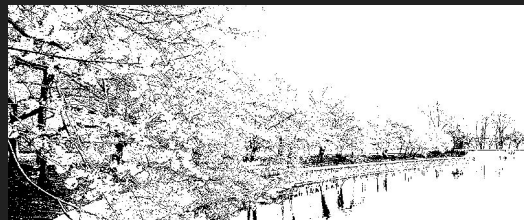


Blackwhite Picture



Blackwhite Pictures -1:255 in Integrals of 32

0-32



96-128



192-224



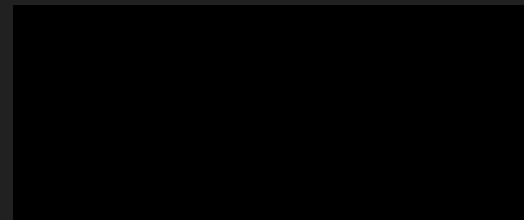
32-64



128-160



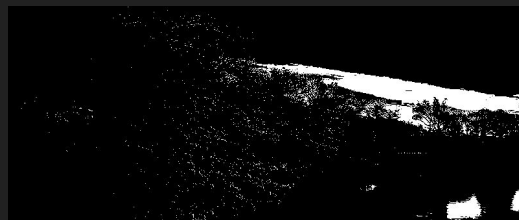
224- -1



64-96



160-192



Desaturate Function

```
def desaturate(img, percent=1,s=False):  
    img2=img*1.0  
    if percent==0:  
        if s==True:  
            show(img2)  
            return img2  
        return img2  
    if percent==1:  
        if s==True:  
            show(greyscale(img2))  
            return greyscale(img2)  
        return img2  
    sat=img[:, :, 1]  
    grey=img*1.0  
    grey[:, :, 0]=sat  
    grey[:, :, 1]=sat  
    grey[:, :, 2]=sat  
    img2=(img*(1-percent)  
    + grey*percent)  
    if s==True:  
        show(img2)  
    return img2  
return img
```


Desaturation Pictures: 0-.8%

In Integrals of .1

Original Image or 0%



.1%



.2%



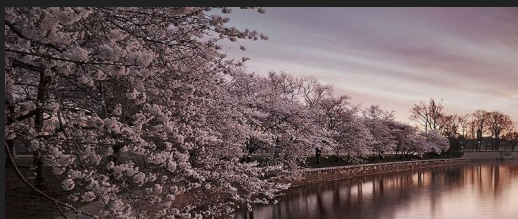
.3%



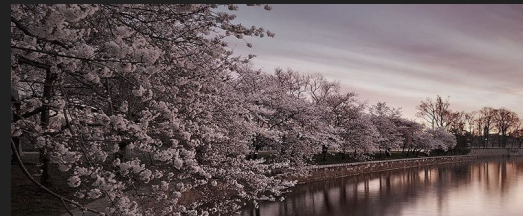
.4%



.5%



.6%



.7%



.8%



Desaturation Pictures: .9-1%
In Integrals of .1

.9%



Greyscale or 1%



Contrast Function

```
def contrast(img,factor=1,s=False):
```

```
    img2=img*1.0
```

```
    np.uint8(img2)
```

```
    img2=(img2-128)*factor+128
```

```
    img2[img2<0]=0
```

```
    if s==True:
```

```
        show(img2)
```

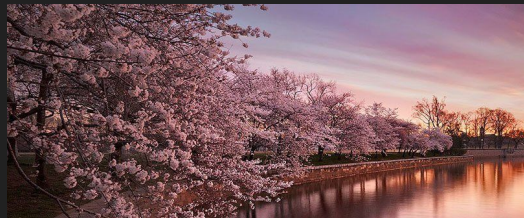
```
    return img2
```

```
return img2
```

Contrast Pictures: 0.5-1.2

In Integrals of .1

Original Image



.5



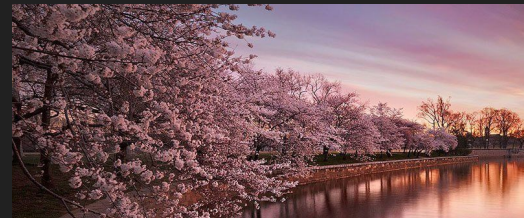
.6



.8



.9



1.1



1.2



Contrast Pictures: 1.3-1.5 In Integrals of .1

1.3



1.4



1.5



Tint Function

```
def tint(img,color,percent=0.5,s=False):
```

```
    tinter=int(255*percent)
```

```
    imgT=img*1.0
```

```
    r=imgT[:, :, color]
```

```
    r=(1-percent)*r+percent*tinter
```

```
    imgT[:, :, color] = r
```

```
    if s==True:
```

```
        show(imgT)
```

```
    return imgT
```

```
return imgT
```


Tint Pictures Blue, Red, Green at .7%

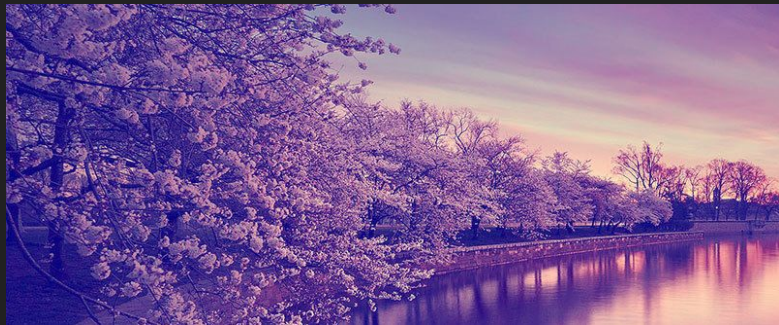
Original Image



Green Tint Image



Blue Tint Image



Red Tint Image

