Experiment-9

INTENSITY TRANSFORMATION

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Semester : 5 **Date of Performance :**

Subject Name: DIP **Subject Code :** CSF-336

1. **AIM/OVERVIEW of the Practical**

   In this experiment we have perform intensity transformation. In this we have used the jupyter notebook software.

2. **Task to be Done**

   Various tasks which we have to performed in this experiment that are

   - Read images
   - Perform operation on images
   - Display image

3. **Required Libraries Or Softwares**

   Software – Jupyter Notebook

   Libraries – numpy, matplotlib, pil, scikit Image, opencv

Steps for Experiment/Practical

1. # Linear Transformation

   ```
   import cv2
   img_1= cv2.imread('colors.jpg',0)
   img_2= 255 - img_1
   cv2.imshow('input image',img_1)
   cv2.imshow('image negative', img_2)
   cv2.waitKey(0)
   cv2.destroyAllWindows()
   ```

2. #Log Transformation

   ```
   import cv2
   import numpy as np
   img_1= cv2.imread('colors.jpg',0)
   ```

```
img_2= np.uint8(np.log1p(img_1))
thresh=1
img_3= cv2.threshold(img_2,thresh,255,cv2.THRESH_BINARY)[1]
cv2.imshow('input image',img_1)
cv2.imshow('log transformed image', img_3)
cv2.waitKey(0)
cv2.destroyAllWindows()
```

3. #Power Law Transformation

```
import cv2
import numpy as np
img_1= cv2.imread('colors.jpg',0)
gamma=1
img_2= np.power(img_1,gamma)
gamma=1.5
img_3= np.power(img_1,gamma)
#gamma=4
#img_4= np.power(img_1,gamma)
#gamma=0.7
#img_5= np.power(img_1,gamma)
cv2.imshow('input image',img_1)
cv2.imshow('gamma correction_1', img_2)
cv2.imshow('gamma correction_2', img_3)
#cv2.imshow('gamma correction_3', img_4)
#cv2.imshow('gamma correction_4', img_5)
cv2.waitKey(0)
cv2.destroyAllWindows()
```

4. #identity Transformation

```
import cv2
img_1= cv2.imread('imgg1.jpg')
img_2= img_1-255
cv2.imshow('input image',img_1)
cv2.imshow('image identity', img_2)
cv2.waitKey(0)
```

```
cv2.destroyAllWindows()
```

5. Inverse Log Transformation

```
import cv2
import numpy as np
img_1= cv2.imread('imgg1.jpg',0)
img_2= np.uint8(np.expm1(img_1))
thresh=1
img_3= cv2.threshold(img_2,thresh,255,cv2.THRESH_BINARY)[1]
cv2.imshow('input image',img_1)
cv2.imshow('Inverse log transformed image', img_3)
cv2.waitKey(0)
cv2.destroyAllWindows()
```

4. The command that we have learned today in the program :

In this program we have learnt various command for intensity transformation.

5. Output

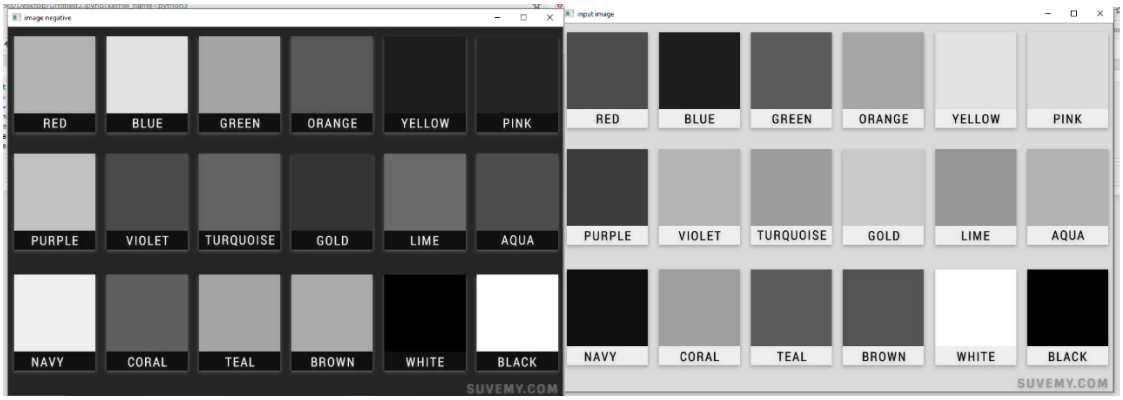
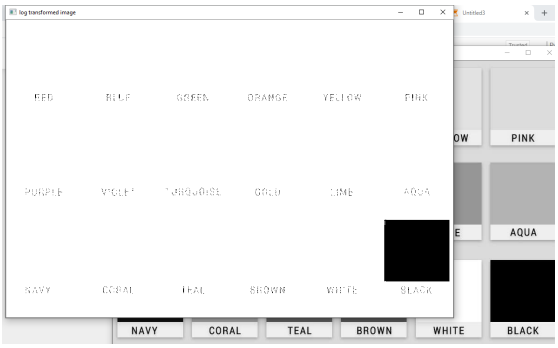


image negative
RED
BLUE
GREEN
ORANGE
YELLOW
PINK
PURPLE
VIOLET
TURQUOISE
GOLD
LIME
AQUA
NAVY
CORAL
TEAL
BROWN
WHITE
BLACK
SUVEMY.COM
input image
RED
BLUE
GREEN
ORANGE
YELLOW
PINK
PURPLE
VIOLET
TURQUOISE
GOLD
LIME
AQUA
NAVY
CORAL
TEAL
BROWN
WHITE
BLACK
SUVEMY.COM


log transformed image
NAVY
CORAL
TEAL
BROWN
WHITE
BLACK

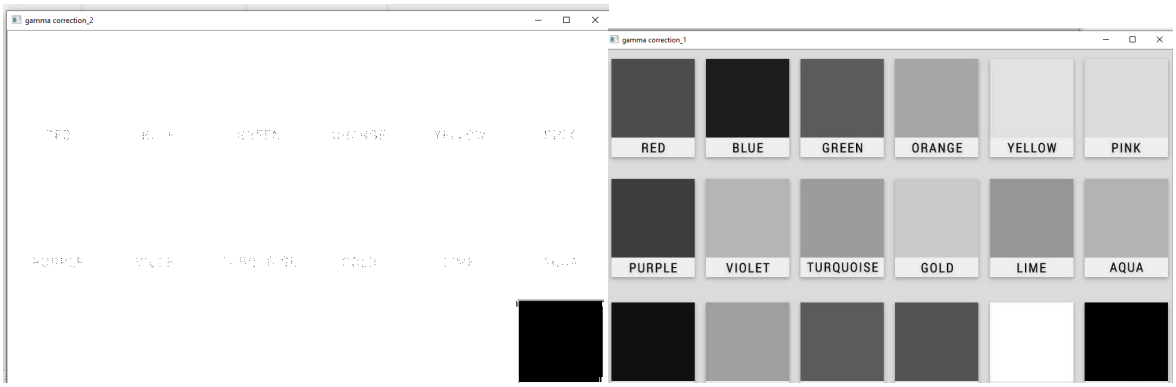
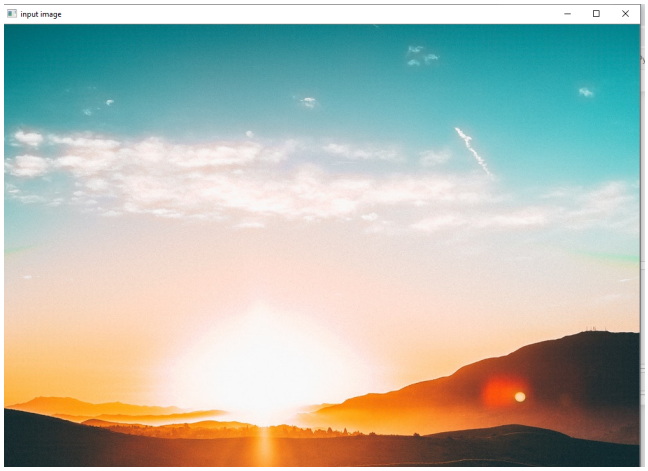

gamma correction_2
gamma correction_1
RED
BLUE
GREEN
ORANGE
YELLOW
PINK
PURPLE
VIOLET
TURQUOISE
GOLD
LIME
AQUA


image identity


input image


Inverse log transformed image