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AIM - To study and perform point-point processing operations used in image enhancement.

1. Negative Transformation
2. Log Transformation
3. Power-Law Transformation
4. Bit Plane Transformation
5. Grey Level Slicing

Importing Dependencies

```
import cv2
import numpy as np
```

Reading the images

```
img = cv2.imread('../data/cameraman.jpg', 0)
```

1. Negative Transformation

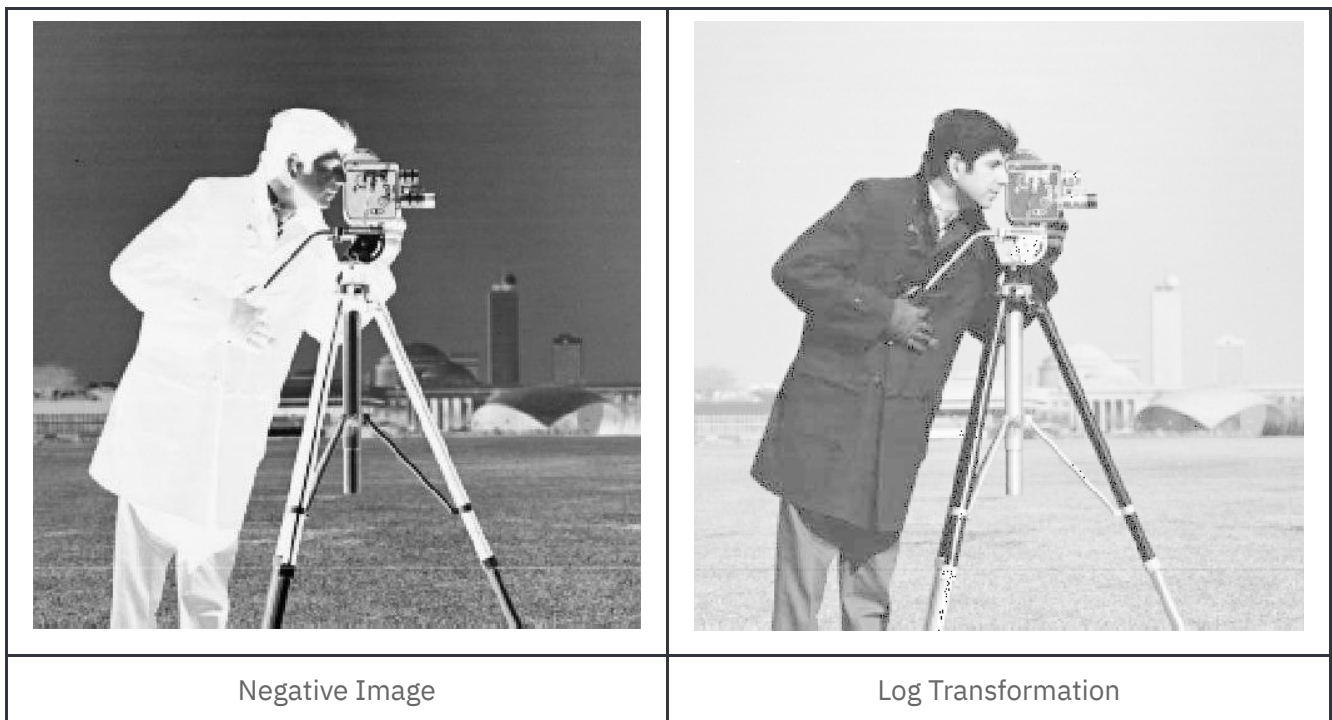
```
img_neg = 255 - img
cv.imshow('Negative Transformation', img_neg)
```

Output

2. Log Transformation

```
c = 255 / np.log(1 + np.max(img))
img_log = c * np.log(1 + img)
img_log = np.array(img_log, dtype=np.uint8)
cv.imshow('Log Transformation', img_log)
```

Output



3. Power-Law Transformation

```
c = 255 / (np.max(img) ** 0.5)
img_pow = c * (img ** 0.5)
img_pow = np.array(img_pow, dtype=np.uint8)
cv.imshow('Power-Law Transformation', img_pow)
```

Output

		
Gamma = 1.0	Gamma = 2.0	Gamma = 3.0

4. Bit Plane Transformation

```
img_bit = np.zeros(img.shape, dtype=np.uint8)
for i in range(8):
    img_bit = img_bit + ((img >> i) & 1) * (2 ** i)
cv.imshow('Bit Plane Transformation', img_bit)
```

Output

image	image	image	image
			
bit plane 1	bit plane 2	bit plane 3	bit plane 4
			
bit plane 5	bit plane 6	bit plane 7	bit plane 8

5. Grey Level Slicing

```
img_slice = np.zeros(img.shape, dtype=np.uint8)
img_slice[(img ≥ 100) & (img ≤ 200)] = 255
cv.imshow('Grey Level Slicing', img_slice)
```

Output



Grey Level Slicing