



Image Understanding and Processing (OpenCv-Python)

Lab Exercise – 05

Year 4

Semester 1, 2025

Goal

- Apply Negative transformation for color images
- Apply Power-law transformation/Gamma correction to improve the contrast of images
- Apply Log transformation to improve the dynamic range of images

1. Negative transformation for color images

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

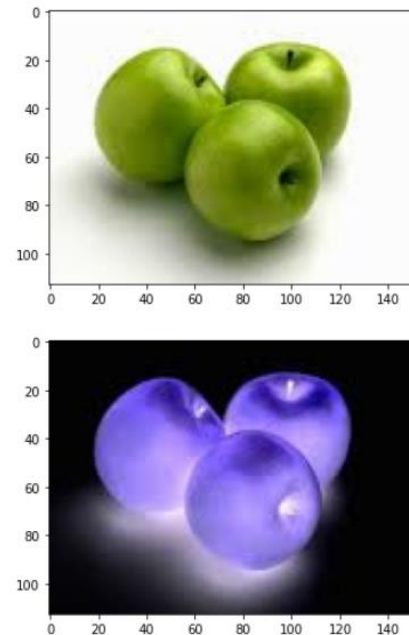
# complete the code here

plt.imshow(img)
plt.show()

plt.imshow(img_neg)
plt.show()

cv2.waitKey(0)
```

Complete the code to obtain the output



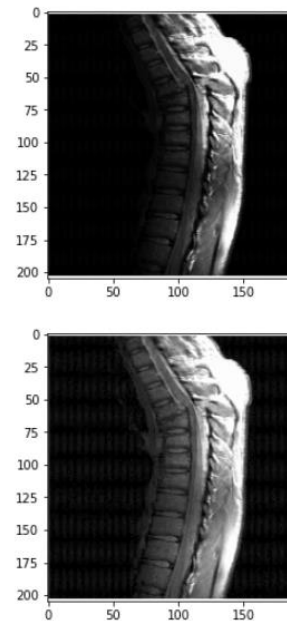
2. Power-law transformation to improve the contrast of a dark image

```
import cv2
import numpy as np
import matplotlib.pyplot as plt
img = cv2.imread('F:/Python/gamma.jpg',0)

#complete the code here|

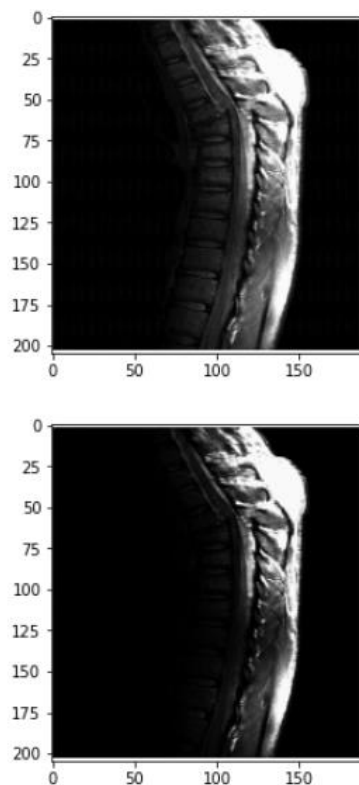
plt.imshow(img, cmap= 'gray')
plt.show()

plt.imshow(img_2, cmap= 'gray')
plt.show()
cv2.waitKey(0)
```



3. Power-law transformation to improve the contrast of the following image

Modify the code to obtain the output



4. Log transformation to improve the dynamic range of an image

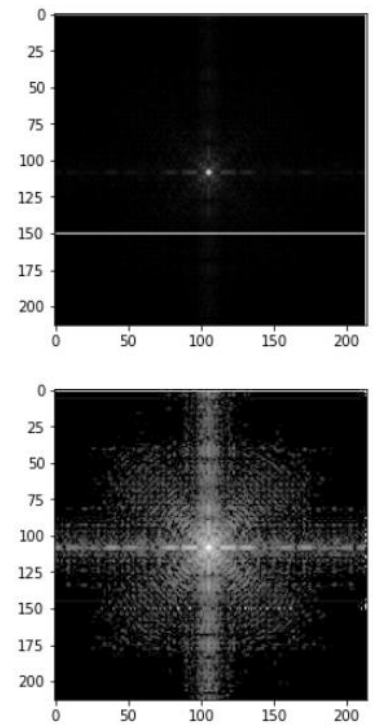
```
import cv2
import numpy as np
import matplotlib.pyplot as plt
image = cv2.imread('F:/Python/log.jpg',0)

# Apply log transformation method
#complete the code here

# Specify the data type so that
# float value will be converted to int
log_image = np.array(log_image, dtype = np.uint8)

# Display both images
plt.imshow(image, cmap= 'gray')
plt.show()
plt.imshow(log_image, cmap= 'gray')
plt.show()

cv2.waitKey(0)
```



Complete the code to obtain the output