**AIM: Perform gray level operations images.**

import cv2

import numpy as np

from google.colab.patches import cv2\_imshow

# Load the input grayscale image

image = cv2.imread('/content/3fa6bc6d-ae9c-4f37-af02-777c9211267a.jpg', cv2.IMREAD\_GRAYSCALE)

# Check if the image is loaded successfully

if image is None:

print("Error: Could not open or find the image.")

exit()

# Function to perform image negation

def image\_negation(input\_image):

negated\_image = 255 - input\_image

return negated\_image

# Function to perform image thresholding

def image\_thresholding(input\_image, threshold\_value):

\_, thresholded\_image = cv2.threshold(input\_image, threshold\_value, 255, cv2.THRESH\_BINARY)

return thresholded\_image

# Function to perform image gamma correction

def image\_gamma\_correction(input\_image, gamma):

gamma\_corrected\_image = np.power(input\_image / 255.0, gamma) \* 255.0

gamma\_corrected\_image = np.uint8(gamma\_corrected\_image)

return gamma\_corrected\_image

# Perform gray level operations

negated\_image = image\_negation(image)

thresholded\_image = image\_thresholding(image, 128)

gamma\_corrected\_image = image\_gamma\_correction(image, 1.5)

# Display the original and processed images

cv2\_imshow(image)

cv2\_imshow(negated\_image)

cv2\_imshow(thresholded\_image)

cv2\_imshow(gamma\_corrected\_image)

# Wait for a key press and then close the windows

cv2.waitKey(0)

cv2.destroyAllWindows()