import cv2

import numpy as np

from matplotlib import pyplot as plt

image = cv2.imread('1.png', cv2.IMREAD\_GRAYSCALE)

A = 1.5

mask\_4 = np.array([[0, -1, 0],

[-1, A + 4, -1],

[0, -1, 0]])

mask\_8 = np.array([[-1, -1, -1],

[-1, A + 8, -1],

[-1, -1, -1]])

sharpened\_4 = cv2.filter2D(image, -1, mask\_4)

sharpened\_8 = cv2.filter2D(image, -1, mask\_8)

plt.figure(figsize=(12, 4))

plt.subplot(1, 3, 1)

plt.title("Original")

plt.imshow(image, cmap='gray')

plt.subplot(1, 3, 2)

plt.title("High-Boost (4-neighbor)")

plt.imshow(sharpened\_4, cmap='gray')

plt.subplot(1, 3, 3)

plt.title("High-Boost (8-neighbor)")

plt.imshow(sharpened\_8, cmap='gray')

plt.tight\_layout()

plt.show()

