Vinh Long University of Technology Education
Faculty of Information Technology

FINAL EXAM ANSWER KEY
SEMESTER: 2nd
ACADEMIC YEAR: 2023 -2024
Module: Advanced Image Processing
Module Code: TH0206
Exam Code: 01
Duration: 90 minutes

ANSWER SECTION

Question	Answer Content	Points
Question 01		**2.0**
1	Read the image using cv2.imread.	0.25
2	Display the original image using cv2_imshow.	0.25
3	Set up the emboss filter.	0.25
4	Set up the Laplacian filter.	0.25
5	Convolve the image with the emboss filter.	0.25
6	Display the image after convolution with the emboss filter as required.	0.25
7	Convolve the embossed image with the Laplacian filter.	0.25
8	Display the image after convolution with the Laplacian filter as required.	0.25
Question 02		**2.0**
1	Identify the type of noise as salt and pepper	0.5 điểm
2	Read the image using cv2.imread	0.25 điểm
3	Use a median filter to denoise the image	0.25 điểm
4	Apply the median filter three times with a 3x3 kernel size	0.5 điểm
5	Display the processed image as required	0.5 điểm
Question 03		**3.0**
1	Read and display the image using cv2.imread	0.25
2	Extract the Red color channel	0.25
3	Extract the Green color channel	0.25
4	Extract the Blue color channel	0.25
5	Convert the image to grayscale and apply GaussianBlur for smoothing	0.25
6	Apply binary thresholding using cv2.THRESH_BINARY with thresholds of 120 and 255	0.25
7	Implement contour detection using the cv2.findContours method	0.25

8	Set the contour line thickness to 2 in cv2.drawContours	0.25
9	Display the results as specified	0.25
10	Use the cv2.Canny filter for edge detection on the original image	0.25
11	Set the thresholds for the Canny filter to 100 and 200, respectively	0.25
12	Display the results as specified	0.25
Question 04		**3.0**
1	Read and display the image book1	0.25
2	Read and display the image book2	0.25
3	Initialize SIFT_create()	0.25
4	Use detectAndCompute to find keypoints	0.25
5	Set up BFMatcher()	0.25
6	Implement BFMatcher with knnMatch where k = 2	0.25
7	Implement ratio test with distance < 0.5	0.25
8	Set matchColor to (255, 255, 255) in drawMatchesKnn	0.25
9	Set singlePointColor to (0, 255, 255) in drawMatchesKnn	0.25
10	Set the flag to 0 in drawMatchesKnn	0.25
11	Convert the image color using cv2.cvtColor(img3, cv2.COLOR_BGR2RGB)	0.25
12	Display the results as required	0.25

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ANH-CANG PHAN   **ANH-CANG PHAN**