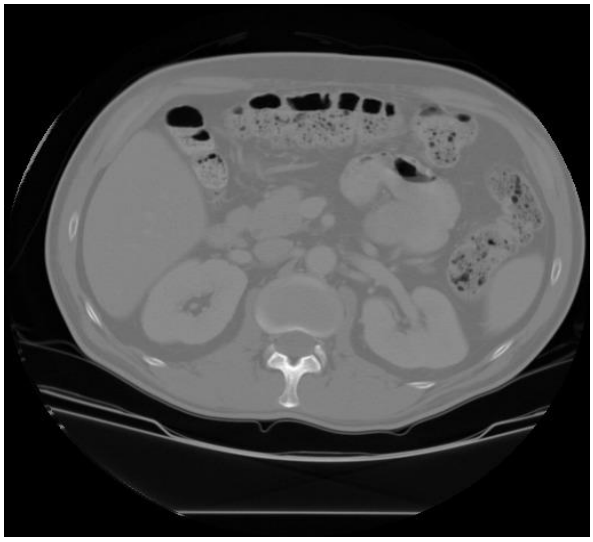
IPU-CSL 444 (S23) Programming Assignment – 2

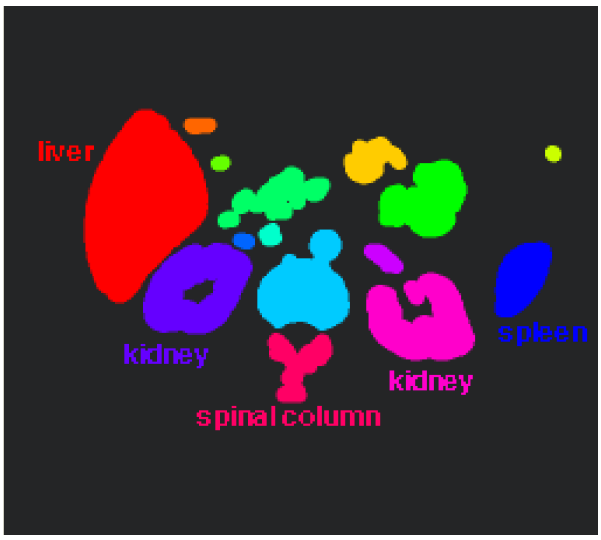
Solve any five questions out of six. Each question reserved 3 marks. Evaluation date: 14.4.2023

1Q. Implement a function Count_hole( ) that takes a black and white image (imghole.jpg) as input and returns number of holes in that image. Use morphological and logical operations in the Count_hole() function implementation.

2Q. Implement a program that uses thresholding and morphological operations to segment the organ of interest in the given CT image, abdomen.jpg. Organs of interest are shown in the below image.



a) Input image (abdomen.jpeg)



b) Output image

3Q. Implement your own program to detect number of circles in the image disks.png using the circle Hough transforms method and compare the obtained output with built-in function output.

4Q. Implement a program to detect moving vehicles by using median differencing background subtraction technique and mention your observations on the result. Use **traffic.3gp** video clip to test your code.

5Q. Write a program to perform robust image matching using RANSAC algorithm and Harris Corner features. Use **FM_img1.jpg** and **FM_img2.jpg** to test the program.

6Q. Write a program to implement Otsu's algorithm for global threshold-based image segmentation. Use **Boat_Otsu.png** image to test your code.