ELEC4630/7463 Image Processing and Computer Vision

Assignment 3

(Due date: Monday 13/05/2019 at 5pm)

1. Segment some sample ANA IFF HEp 2 cell images using appropriate methods of your choice (thresholding, morphology, etc). The example images on Blackboard represent borderline and high positive samples. Comment briefly on the challenges and the results you obtained. Design a suitable metric to measure how well you can segment these cells. Explain your method.

(10 Marks)

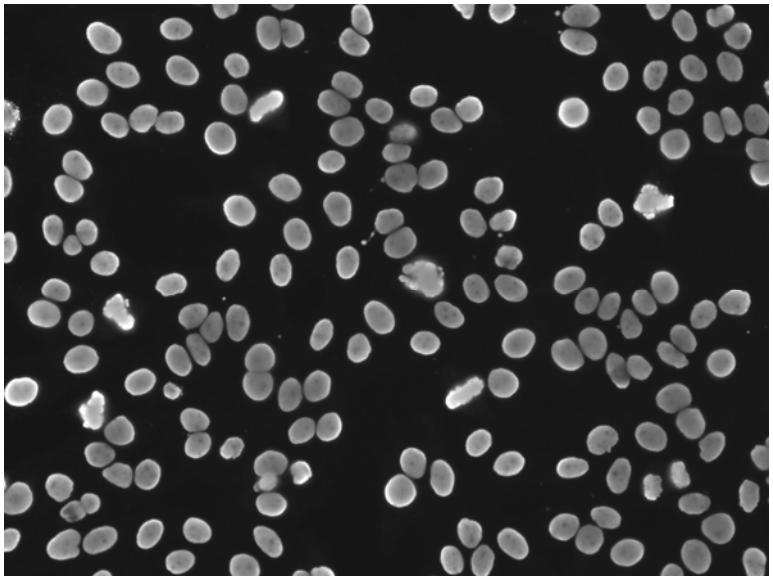

Figure 1 ANA IIF HEp-2 Cell Images: Positive Example

2. Design an algorithm to determine the length of a piece of string from images. The string can form loops and cross over itself. You are provided with sample images of Strings 1 and 2 taken under the same conditions and you will be given the physical length of the string for calibration. For your assignment, you should determine the length of the string in each image example, and provide commented code and a description of your methods. Your algorithm should be able to work on the entire database including string 3 without modification or parameter adjustment.

String 1 = 13cm

String 2 = 15.5cm

String 3 = ??cm

(7 marks)

3. Using your algorithm from Question 2 or otherwise solve the following problem. Try to develop a GUI so that clicking on a string will show the complete path. The scanned image is available on Blackboard.

(Total 3 Marks)

(Total 20 Marks)