

CP467 assignments, quizzes and midterm exams

Follow the instructions that will be given in the class and answer the following questions.

- 1- Write a program to apply a 3x3 filter to an image (the original image should be gray). Show the original image and the output image after applying the filter [6 marks]. **Due date: Wednesday Sep 19, 2018**
Quiz 1 will be on Wed Sep 19, 2018
- 2- Write a program to change the value of each pixel to either black or white, then display the image. Write a program to count the number of black pixels in each symbol in each connected region [6 marks]. **Due date: Wed Sep 26**
- 3- Write a program to do the convolution of an image with $\begin{bmatrix} 1/3 & 1/3 & 1/3 \\ 1/3 & 1/3 & 1/3 \\ 1/3 & 1/3 & 1/3 \end{bmatrix}$, and to do the convolution of the resultant image with $\begin{bmatrix} 1/3 \\ 1/3 \\ 1/3 \end{bmatrix}$. Compare the results with applying 3x3 filters to the original image where each value in the filter is 1/9 [6 marks]. **Due date: Oct 3.**
Quiz 2 will be on Wed Oct 3
Thanksgiving & Reading week Oct 8,9,10,11,12
- 4- Write a program to scale down each symbol in the image to certain dimensions then display the image [6 marks]. **Due date: Wed Oct 17**
- 5- Write a program to divide each symbol into 3x3 zones, find the ratio of black pixels to white pixels in each zone and return the feature vector. (This feature vector consists of 9 slots and can be used to describe the symbol) [6 marks]. **Due Oct 24**
Quiz 3 will be on Wed Oct 24
- 6- Use your program in 5 (or any other features) to store the descriptions of the 10 digits 0, 1, ... 9 in a file [6 marks]. **Due Oct 31**

First Mid-term exam 80 min on Wed Oct 31, 2018 during the lecture time in the same classroom

- 7- Use one of the methods described in the class for measuring distance to test an unknown symbol and to recognize it [6 marks]. **Due Nov 7**
Quiz 4 on Wed Nov 7
- 8- Come with a new useful image operation and implement it, like thinning, ... [6 marks] **Due Nov 14**
Quiz 5 on Wed Nov 14
- 9- **Quiz 6 on Wed Nov 28**

Second Mid-term exam 80 min, on Mon December 3, 2018 during the lecture time in the same classroom

- 10- Write a report 4-6 pages describing your system showing the results and present your work [12 marks]. **Due date: Last day of classes Wed December 5, 2018.** I will also be available after the class for your Demo. In addition, I will be available on Tuesday Dec 4, 2018. Each group will have 10 min for the demo. We will discuss this issue in the class.