
CS 5420

Visual Data Processing

Test 1

Name:

Winter 2006

Max Pts: 36

Important: This is an open book test. You can use any books, notes, or paper, but not exchange anything with other students. You are not allowed to use any electronic/communication devices, including a calculator. *Do not log into the computer during the test.* Any calculations and rough work can be done on the back side of the test pages. You will lose five points for not writing your name.

1. [6 pt] What is PET scan? How can it be used to detect tumors?

2. [6 pt] What is choroid? What is its function?

3. [12 pt] Consider the following binary image.

0	1	0	0	0	0	0	0	1	1
1	1	0	A	1	0	0	1	0	1
1	0	1	0	1	0	0	1	1	0
B	1	1	1	1	1	1	1	1	1
1	1	1	C	0	1	1	0	1	1

For the pixels labeled A, B, and C, give the Euclidean distance, city-block distance, and chessboard distance between each pair of points. Comment if any of these types of distance is not commutative. Circle the pixels that are m -adjacent to A.

4. [6 pt] Describe the three stimuli required to sense chromatic light.

5. [6 pt] Explain the difference between histogram equalization and histogram matching. Provide an example where histogram equalization is better than histogram matching. Also give an example where histogram matching is more suitable.