

Department of Electrical Engineering and Computer Science

CIS 465 Multimedia Fall 2021

Assignment 1

(Due date: 09/13/21)

- 1. Write Python program to perform the data encoding and decoding task as explained in the next page. You may use the same 2D matrix as input to your program.
- 2. Use your program from part 1 and create a function that accepts any input size of a 2D matrix data and returns 2D encoding output whose size is same the input size.

What to turn in:

Submit your work through **Blackboard** as **one single** folder including:

- An HTML file called index.html that links to the overall summary of your answers (screenshot of part 1 output).
- A folder called CIS_465 that includes all files, program codes along with the supported files, dataset needed to reproduce your code (if any), etc.

Notes:

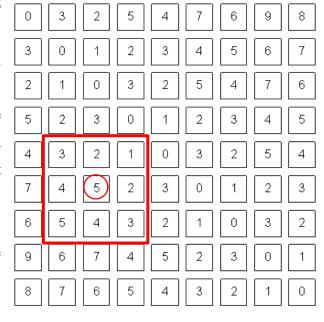
- Late submissions will receive a penalty of 10% per day up to two days.
- No material will be accepted after two days past the deadline.
- Email submissions will not be accepted.



Department of Electrical Engineering and Computer Science

For each element, we need to get its 3×3 neighbors (e.g. 5 in the red circle and its neighbors as in the red box). Then:

- 1. Subtract that element of interest (X) from its 8 neighbors.
- 2. Sign 1 to the values that are greater than or equal 0 and 0 for the values that are less than 0.
- 3. Concatenate the 8-bit binary code as the example bellow (starting from the element in the red circle which will be at the first bit from the right and following the arrows).
- 4. Convert that binary code to decimal.
- 5. Substitute that decimal code instead of the element of interest (X).
- 6. Repeat for all elements.



Note that: The above steps (1-5) must be applied for each pixel of the input image.

Example:

