數位影像處理
HW1

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Hw1 Digital halftoning

Design an 8x8 dithering matrix for which the corresponding dot profile function starts in the highlight areas as a single dot that grows to produce the character for the first letter of your first name in single dot stroke width. Then at higher absorptance values, the stroke width gradually widens. As you move into the shadows, the halftone texture forms a white space that again has the shape of this character. To do this, you may need to invert the white space character either horizontally or vertically, or both, or you may need to make it overlap the black dot character.
For your solution, turn in the following:

a. Dithering matrix

```
[ 76   72   68   64   60   56   52   48;
  80  176  180  184  188  192  196  200 ;
  84   20   16   12    8    4    0  204 ;
  88   24  128  132  136  140  144  208 ;
  92   28   32   36   40   44  148  212 ;
  96  172  168  164  160  156  152  216 ;
 100  104  108  112  116  120  124  220 ;
 252  248  244  240  236  232  228  224 ; ]
```

b. Print the image using the dithering matrix that you designed.

c. Your code

```
clc;clear;close all;
x=imread('house.tif');
D=[ 19 18 17 16 15 14 13 12 ;
    20 44 45 46 47 48 49 50 ;
    21 5  4  3  2  1 0 51 ;
    22 6  32 33 34 35 36 52 ;
    23 7  8  9 10 11 37 53 ;
    24 43 42 41 40 39 38 54 ;
    25 26 27 28 29 30 31 55 ;
    63 62 61 60 59 58 57 56 ] ;
r=repmat(D*4,32,48);
x2=x>r;
imshow(x2)
imwrite(x2,'house1.tif')
```