Computer Vision HW7

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Language: Python3

Description: I use OpenCV to do image I/O, and load raw pixel data (height , length , channels) from lena.bmp.

Run: python hw7.py

Code fragment:

```python
def count_changed(neighbors):
    counter = 0
    state = neighbors[1]
    temp = list(neighbors)
    del temp[0]
    temp.append(temp[0])
    for i in range(len(temp)):
        if i +1< len(temp):
            if temp[i] < temp [i+1] :
                counter +=1
    return counter

def count_not_zero(neighbors):

    return np.sum(neighbors)/255 -1

def first_check(neighbors):
    if count_not_zero(neighbors) >= 2 and count_not_zero(neighbors) <= 6:
        if count_changed(neighbors) == 1:
            if neighbors[1]*neighbors[3]*neighbors[5] == 0 and neighbors[3]*neighbors[5]*neighbors[7] == 0:
                return True
    return False

def second_check(neighbors):
    if count_not_zero(neighbors) >= 2 and count_not_zero(neighbors) <= 6:
        if count_changed(neighbors) == 1:
            if neighbors[1]*neighbors[3]*neighbors[7] == 0 and neighbors[1]*neighbors[5]*neighbors[7] == 0:
                return True
    return False
```

Description:

p_9	p_2	p_3
p_8	p_1	p_4
p_7	p_6	p_5

步驟一：(a). $2 \leqq N(p_1) \leqq 6$,

(b). $S(p_1) = 1$,

(c). $p_2 \cdot p_4 \cdot p_6 = 0$,

(d). $p_4 \cdot p_6 \cdot p_8 = 0$,

步驟二：(a),(b)及(c')(d')

(c'). $p_2 \cdot p_4 \cdot p_8 = 0$,

(d'). $p_2 \cdot p_6 \cdot p_8 = 0$,

參考 thining 作法，不斷重複步驟一、二直到不會再變動為止

Reference:

http://140.112.94.11/~ttlin/course01/lecture_notes/c1lecture_note13.htm

Results: