電腦視覺 HW6

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source code : src/img_process.py
using language : python
using material : numpy, PIL
* following images are resized to fit in the page

Result

src/yokoi_pic, raw text : src/yokoi.txt

“Semi” Pseudo code

```
# DownSampling
Downsample(b_array, unit_size = 8):
        /// resize by 8*8unit
        x,y = shape(b_array)
        X = x/unit_size
        Y = y/unit_size
        /// new image array
        Down_array = zeros(X, Y)
        /// assign pixel value
        for i in range(X):
                for j in range(Y):
                        Down_array[i, j] = b_array[i * unit_size,  j * unit_size]
        return Down_array

# Yokoi Counting
class YokoiConnNumber(object):
        __new__(cls, img, X, Y):
                return [‘ ’ if img[x, y] == 0 for x in range(X), for y in range(Y)
                        _f(cls, img, x, y) else for x in range(X), for y in range(Y)]
_h(neighbors):
      /// 4 connected rule, same as the one from the slides
      b,c,d,e = neighbors
      if (b != c):
            return 's'
      if (b == c == d == e):
            return 'r'
      return ‘q’
_f(pixels, center_x, center_y):
      /// counting neighbors
      width, height = shape(pixels)
      x = list( map from the center to neighbor points )
      a = list(map( (x[0], x[1], x[6], x[2]),
                        (x[0], x[2], x[7], x[3]),
                        (x[0], x[3], x[8], x[4]),
                        (x[0], x[4], x[5], x[1])     ))
      /// call _h function
      return 5 if all(ai == 'r' for ai in a) else a.count(‘q')

# Reference
https://github.com/cyliang
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