Digital Image Processing
HW#3

Watershed-based
Color Image Segmentation Algorithm

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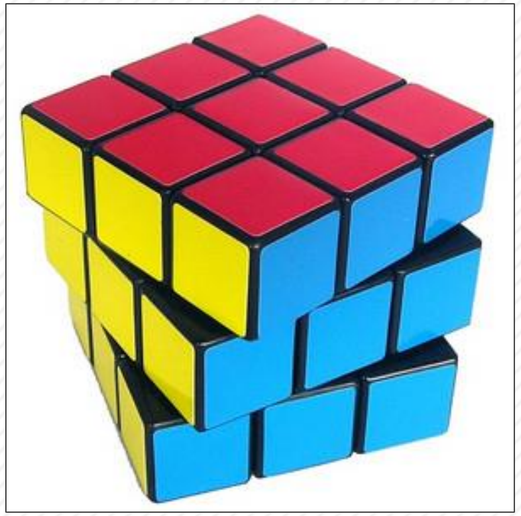
Date: 2018/11/30

Outline

- Goal
- Flow Chart
- Homework Details
  - Extract Contour
  - Watershed Algorithm
- Grading
- Due Date & Demo Schedule
- Note
- Reference

Goal

- Design a color segmentation using watershed algorithm.



Flow Chart (1/2)

Input Picture1

Picture1

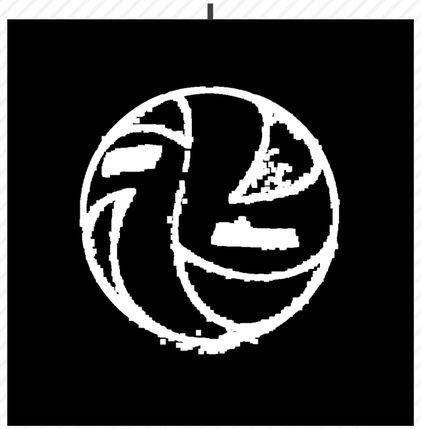
1000 x 1000
24bits bmp

＊原圖為 jpg 請自行轉為bmp

Pre-processing

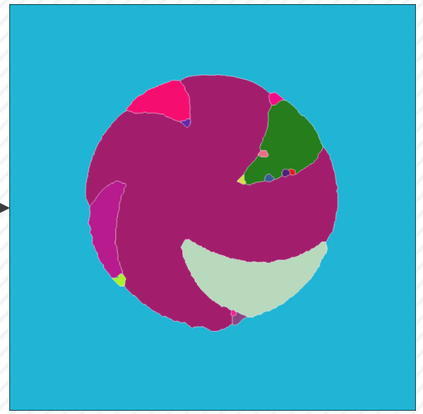
Color space transform,...(etc)

Extract Contour



HW 3-1-1

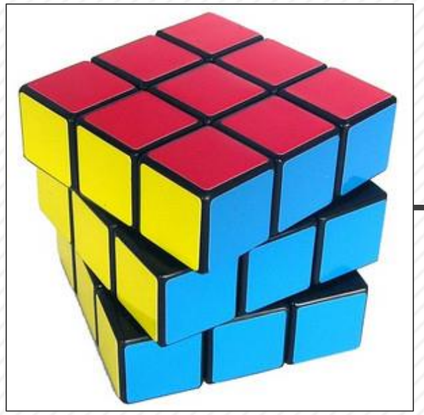
Watershed-based Segmentation



HW 3-1-2

Flow Chart (2/2)

Input



Picture2

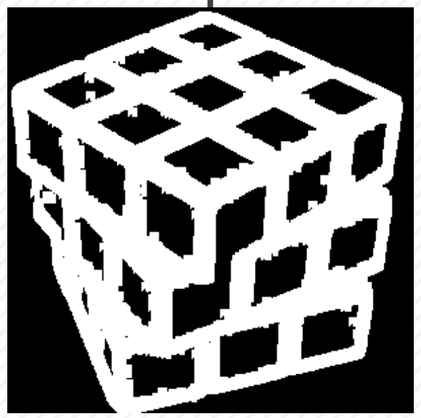
300 x 300
24bits bmp

＊原圖為 jpg 請自行轉為bmp

Pre-processing

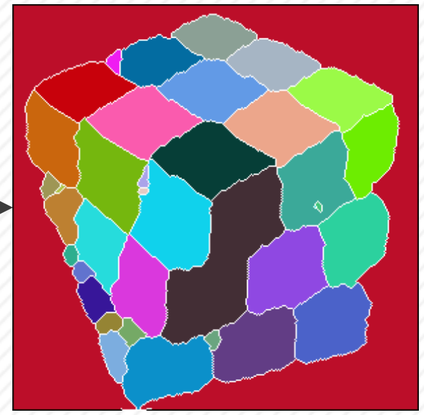
Color space transform,...(etc)

Extract Contour



HW 3-2-1

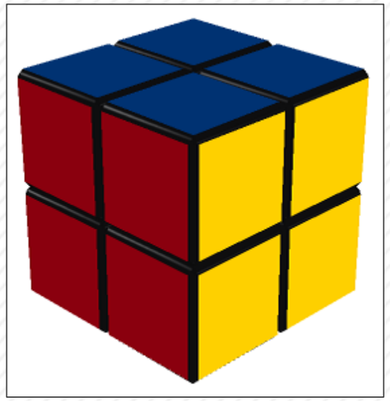
Watershed-based Segmentation

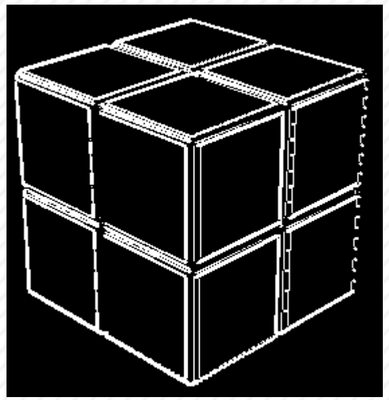


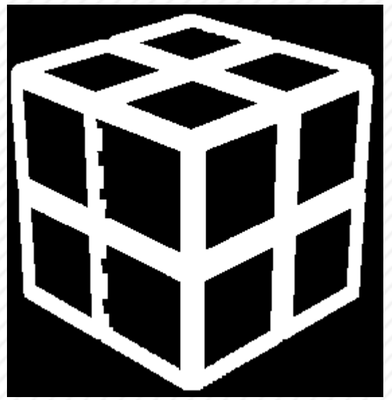
HW 3-2-2

Extract Contour

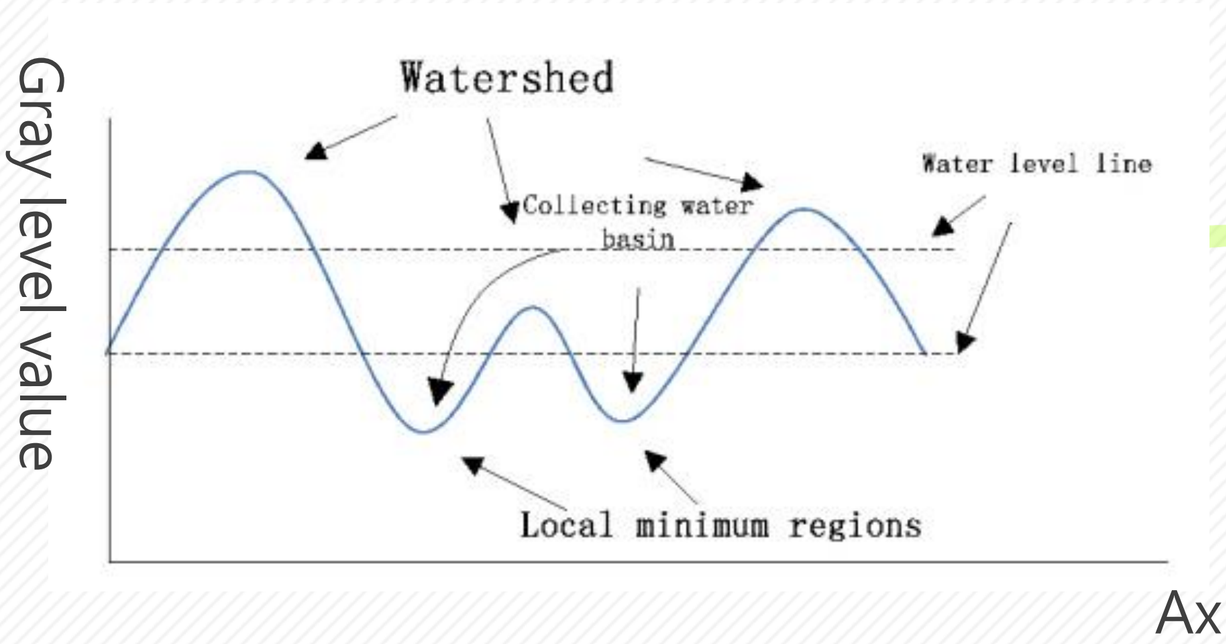
- Goal : 使色塊區域完整, 輪廓接近真實輪廓.
- Method : Edge detection, Morphological Image Processing,...(etc)



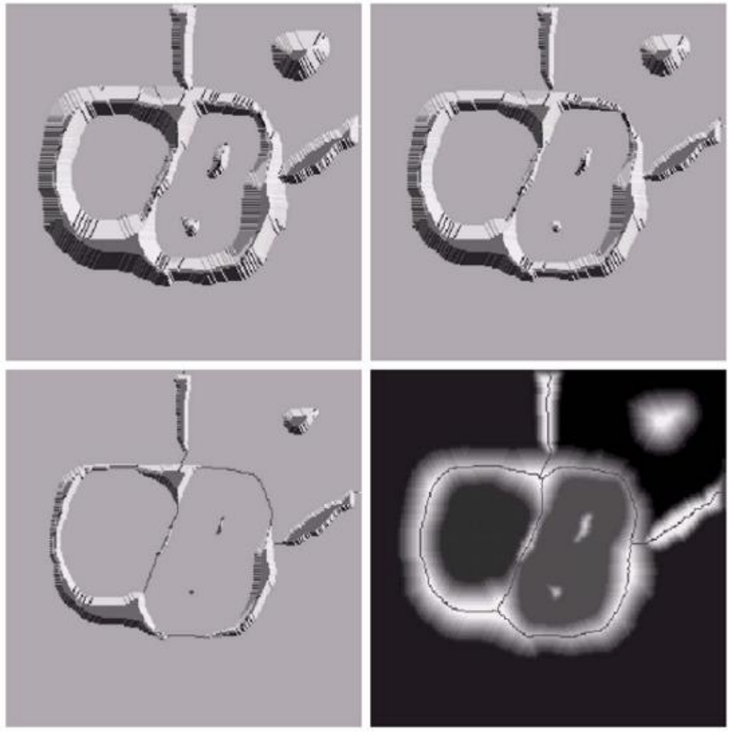




Watershed Algorithm (1/3)



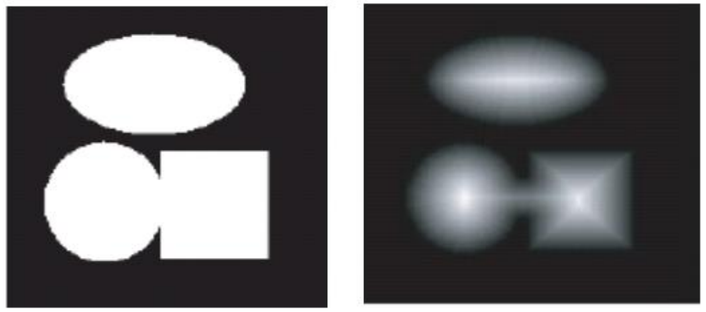
https://gifer.com/en/OllQ

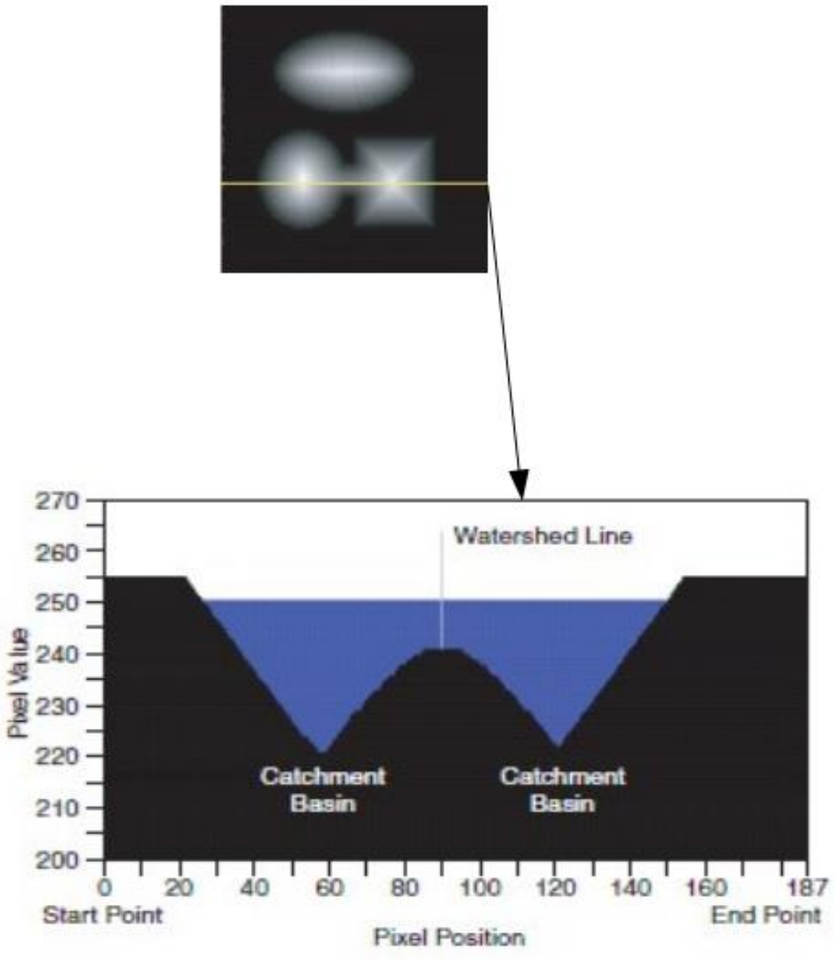


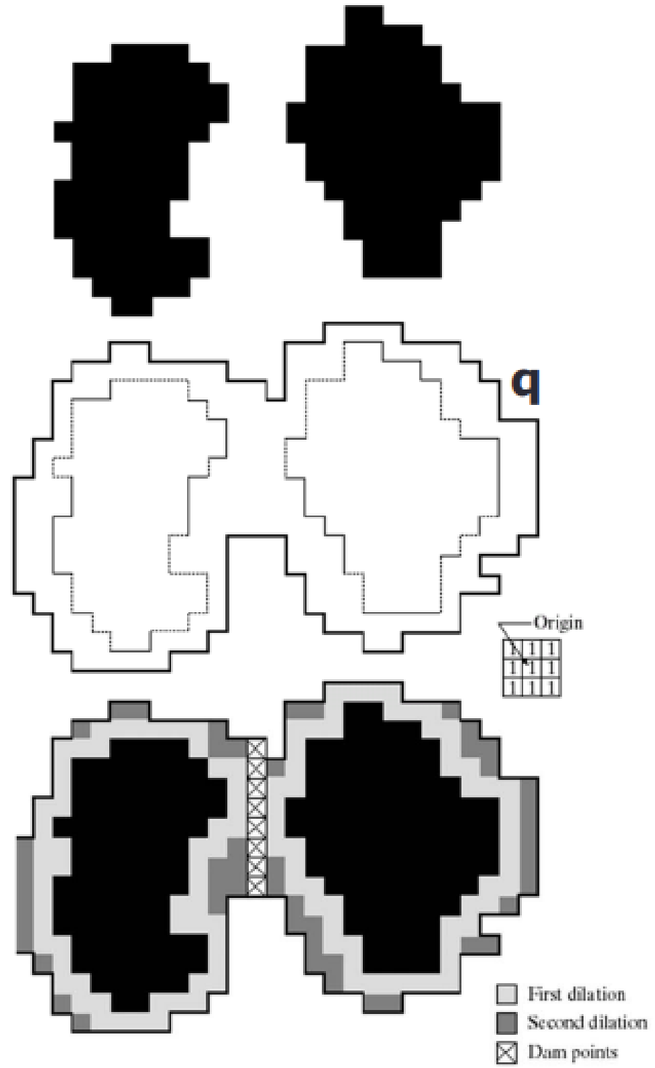
Wei Zhang , DaLing Jiang , “The Marker-Based Watershed Segmentation Algorithm of Ore Image” College of Electronics Information and Control Engineering, Beijing University of Technology Beijing , 2011.

http://140.115.154.40/vclab/advisor/2018DIP/10%20Image%20Segmentation.pdf

Watershed Algorithm (2/3)



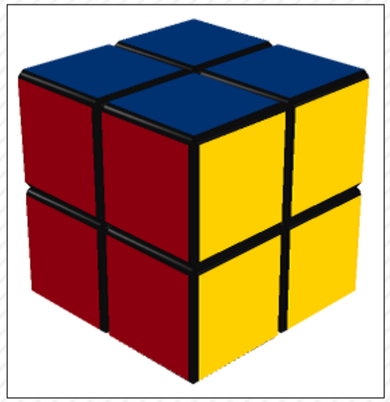




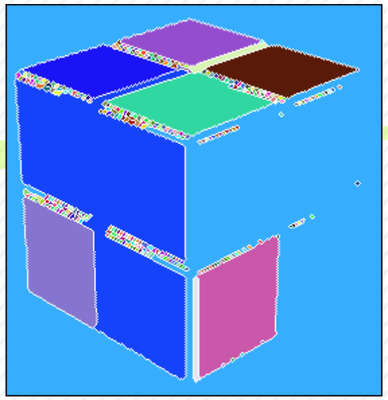
http://www.bcamath.org/documentos_public/courses/course_day3.pdf

http://140.115.154.40/vclab/advisor/2018DIP/10%20Image%20Segmentation.pdf

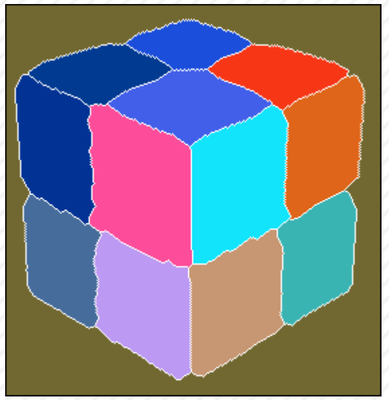
Watershed Algorithm (3/3)



原圖



未確實找出Contour



找出Contour

＊請將每個區塊以不同的顏色表示

圖片來源:http://i.epochtimes.com/assets/uploads/2017/12/fiji-2540446-600x400.jpg

Grading

- Demo Code(60%)
  - –HW3-1
    - HW３-1-2 (10%)
    - HW３-1-3 (20%)
  - –HW3-2
    - HW3-2-1 (10%)
    - HW3-2-2 (20%)

- Report (40%)
  - – Flow Chart (10%)
  - – Experiment Results (10%)
  - – Discussions (20%)

＊若每個區塊未以不同的顏色表示，則該題不予給分

- Using the C/C++ only. Matlab or OpenCV is not allowed.

Due Date & Demo Schedule

Demo Date：Monday Dec.17 or Tuesday Dec.18
Demo time：13:30 ~ 17:30.

- The domo schedule will be announced at the TA webpage.
- You should send your project and report to LMS before Dec.17, 13:00.
- 上傳檔名格式: 學號_姓名.
- No delay. (If you have special case, please send email tell us early.)
- You will get a zero when you delay or fail to operation in demo(code and demo part),but you can still get points in report part.

Note

The details will be announced on our course website.
(http://140.115.154.40/vclab/html/course/DIP2018.html)

- Do it yourself.
- The TA will use another 2 image to test your code.
- If you have a notebook, please bring your own notebook. Otherwise, some people may not be able to execute the code during the demo.
- Cannot use 『Remote Connection』.

Reference

- Gonzalez, Rafael C., and Richard E. Woods, “Digital image processing,” Prentice Hall, 2007.

- download ：

  Picture1:
  https://img2.momoshop.com.tw/goodsimg/0004/292/504/4292504_B.jpg?t=1518336721
  Picture2:
  https://cdn.kingstone.com.tw/cvlife/images/product/30600/3060000006655/3060000006655b.jpg

Any Questions?