Thierry Cantenot

Report

Digital Image Processing

« Assignments »

2014-2015

Summary

A. Morpholigical Processing

A.1 Problem statement

(a) Implement the morphological operations : erosion, dilation, opening and closing, and use the noisy_fingerprint.tif to check your implementation.

(b) Implement boundary extraction, hole filling, connected component extraction. Using licoln_from_penny.tif, region_filling_refletion.tif and chickenfilet_with_bones.tif to the results, respectively.

A.2 Python implementation

Usage : **problem8.py [-h] [–debug] [–test] [–erosion] [–dilation] [–opening] [–closing] [–boundary] [–filling] [–connected] image_path**

Use **python problem8.py -h** to see the help.

A.3 Erosion

python problem8.py –erosion noisy_fingerprint.tif

Figure A.1 – Original image

Figure A.2 – Erosion

A.4 Dilation

python problem8.py –dilation noisy_fingerprint.tif

Figure A.3 – Original image

Figure A.4 – Dilation

A.5 Opening

python problem8.py –opening noisy_fingerprint.tif

Figure A.5 – Original image

Figure A.6 – Opening

A.6 Closing

python problem8.py –closing noisy_fingerprint.tif

Figure A.7 – Original image

Figure A.8 – Closing

A.7 Boundary extraction

python problem8.py –boundary licoln_from_penny.tif

Figure A.9 – Original image

Figure A.10 – Boundary extraction

A.8 Hole filling

python problem8.py –filling region_filling_reflections.tif

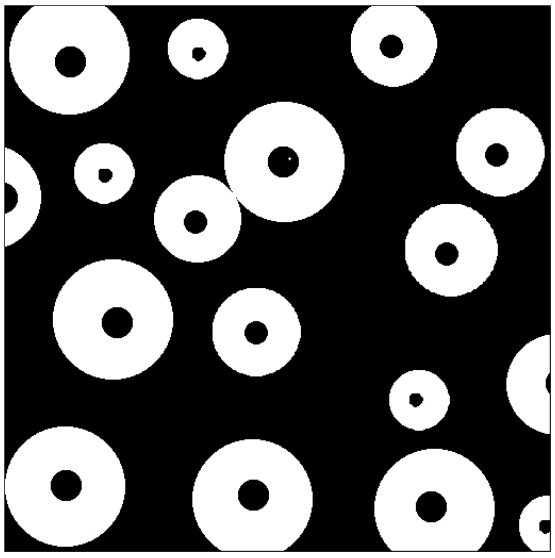

Figure A.11 – Original image

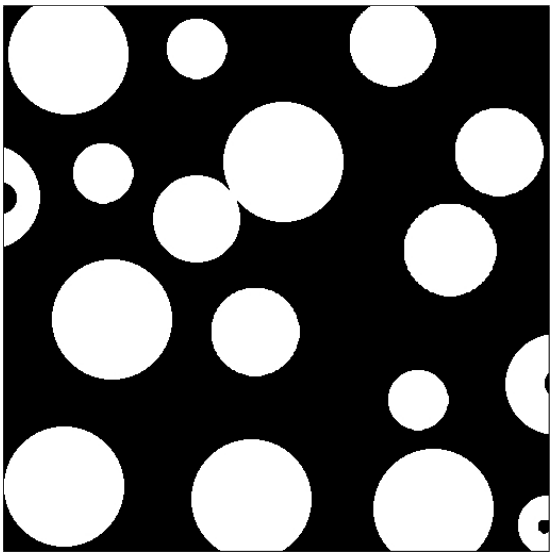

Figure A.12 – Hole filling

A.9 Connected component extraction

python problem8.py –connected chickenfilet_with_bones.tif

Figure A.13 – Original image

Figure A.14 – Thresholding

Figure A.15 – Erosion 5×5

Connected components :

Connected component	No of pixels
01	836
02	690
03	44
04	148
05	1
06	18
07	19
08	26
09	2
10	14
11	11
12	13
13	28
14	87
15	18