Programming Assignment 4
CS111: Digital Image Processing (Fall 2016)

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Part1: Multi-scale Edge Detection

Step1 Second order derivative images at different scales

Cartoon:

Flowergray:

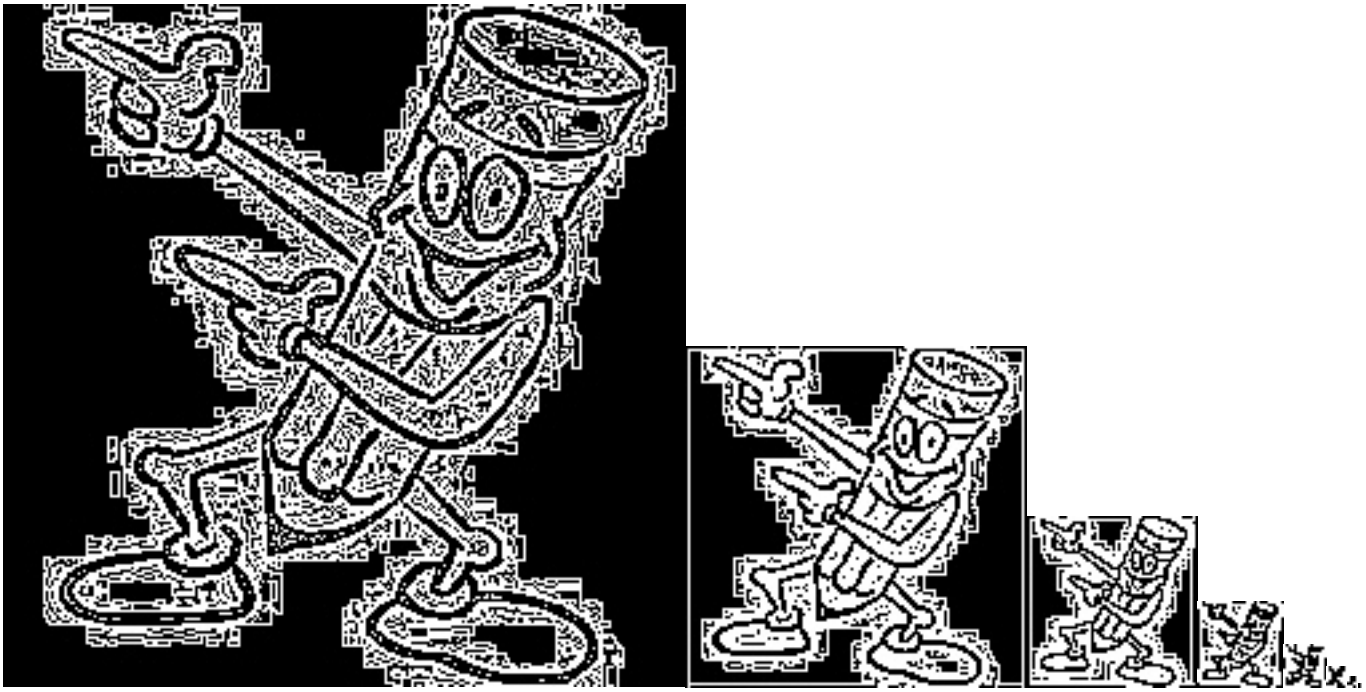
Kitty:

Polarcities:

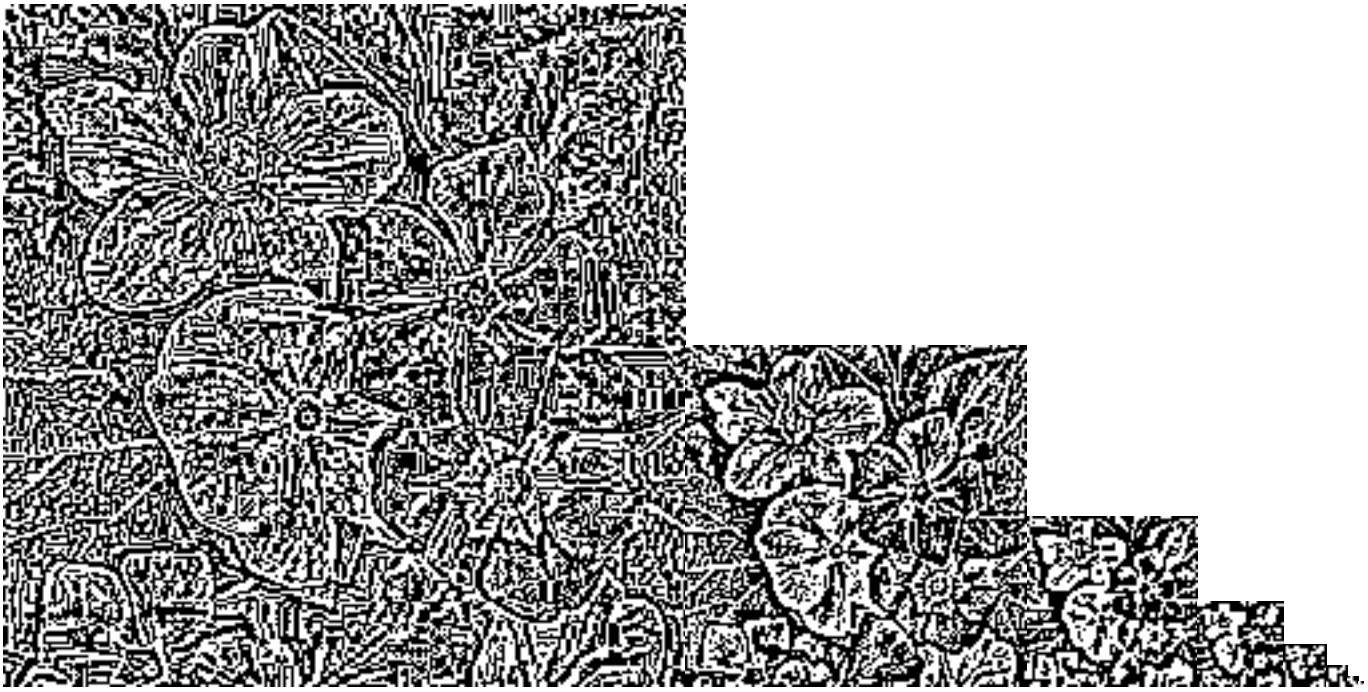
Text:

Step2 Segmentation

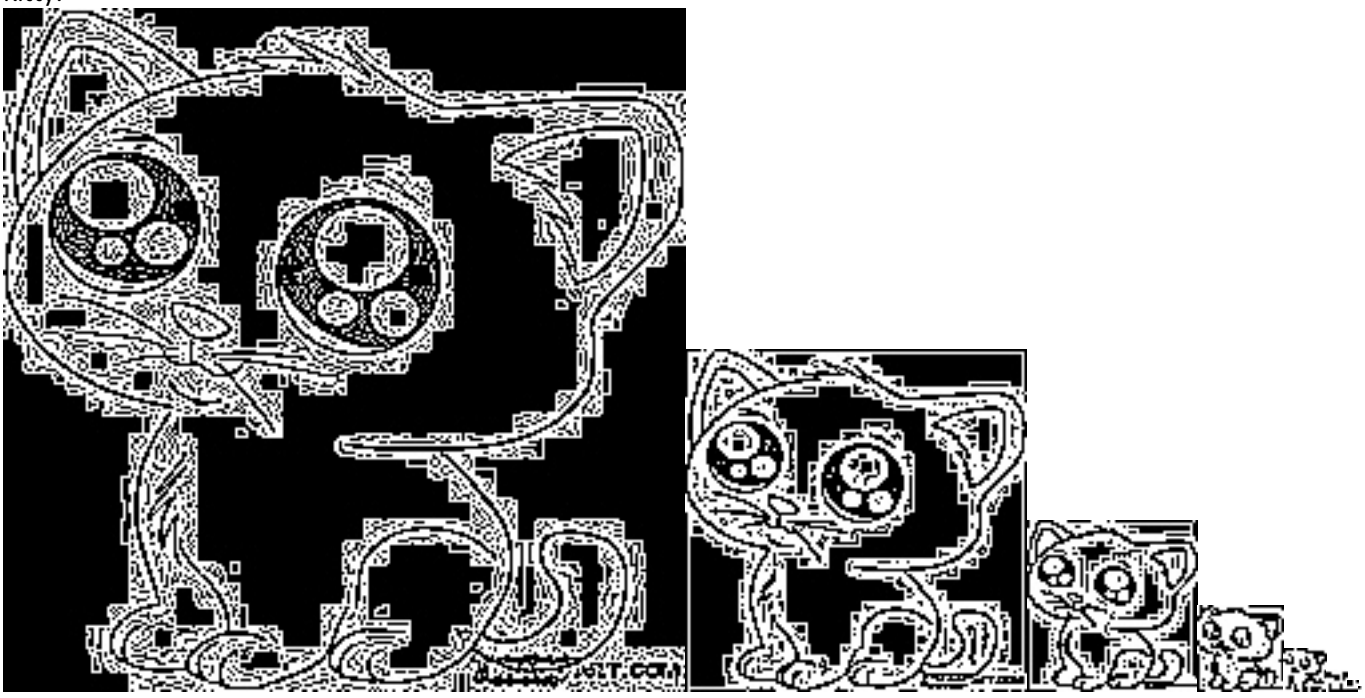
Cartoon:



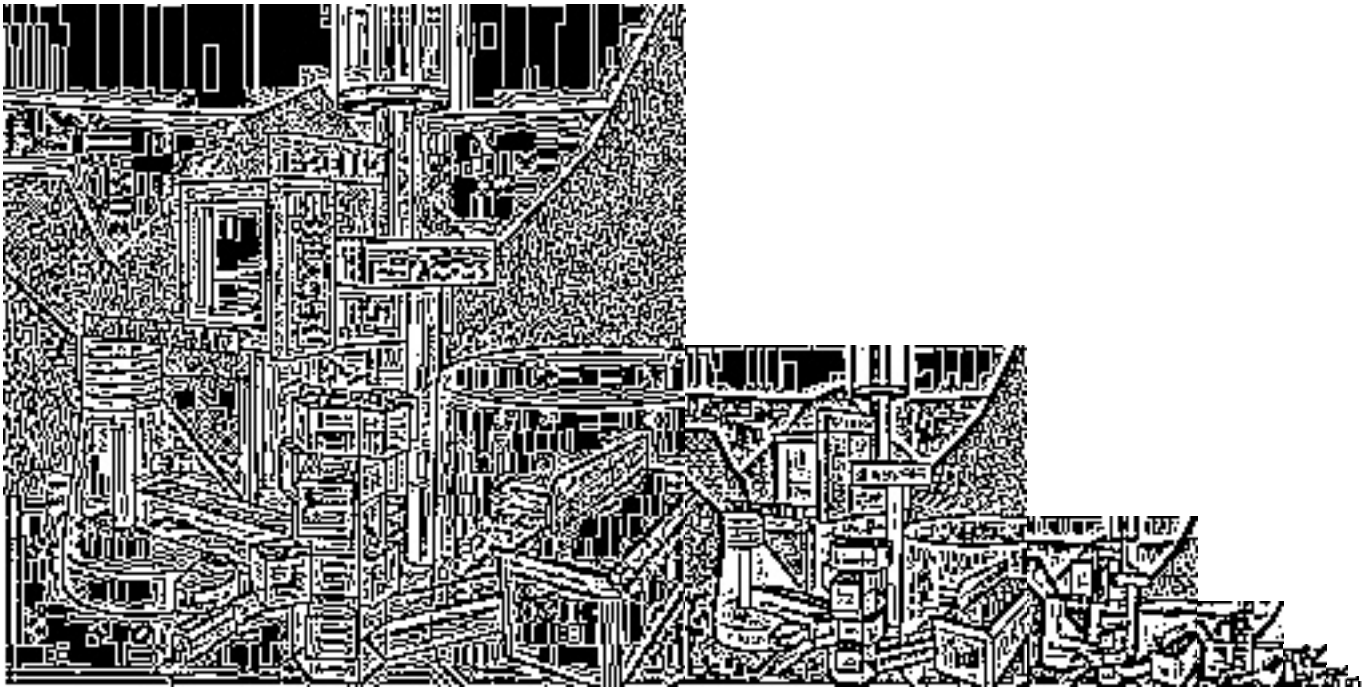
Flowergray:



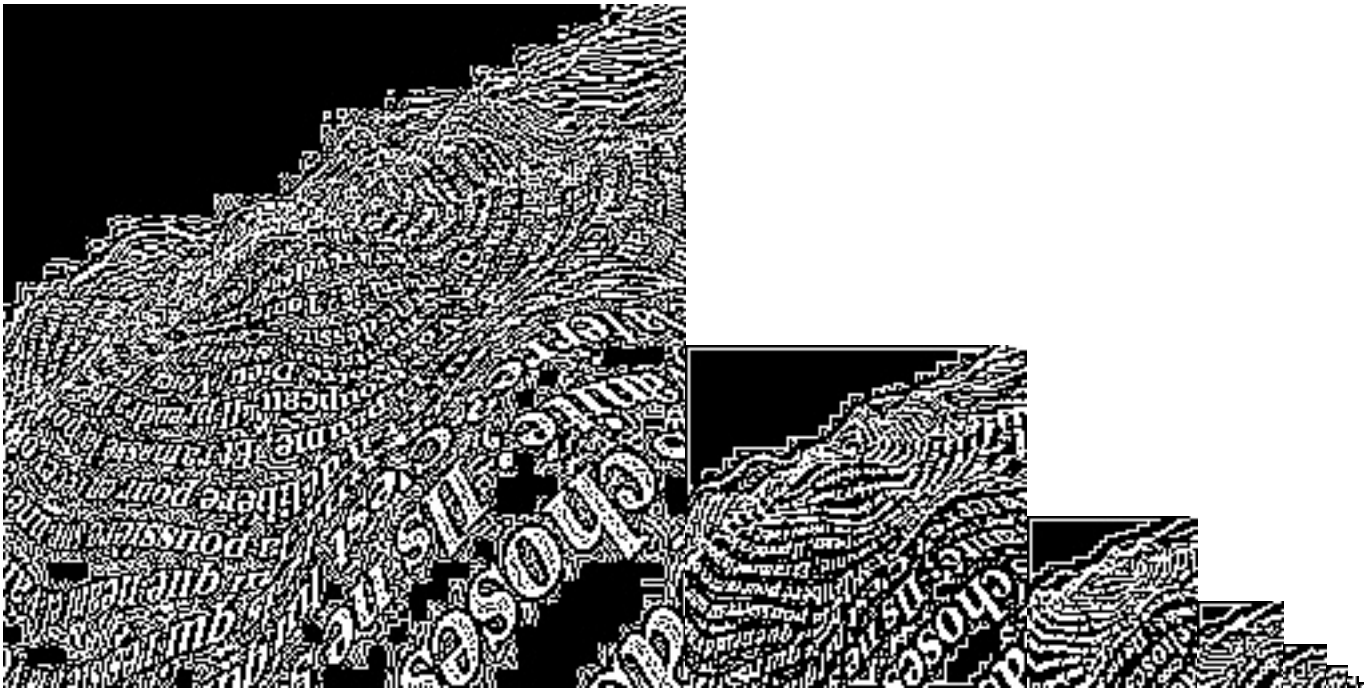
Kitty:



Polarcities:



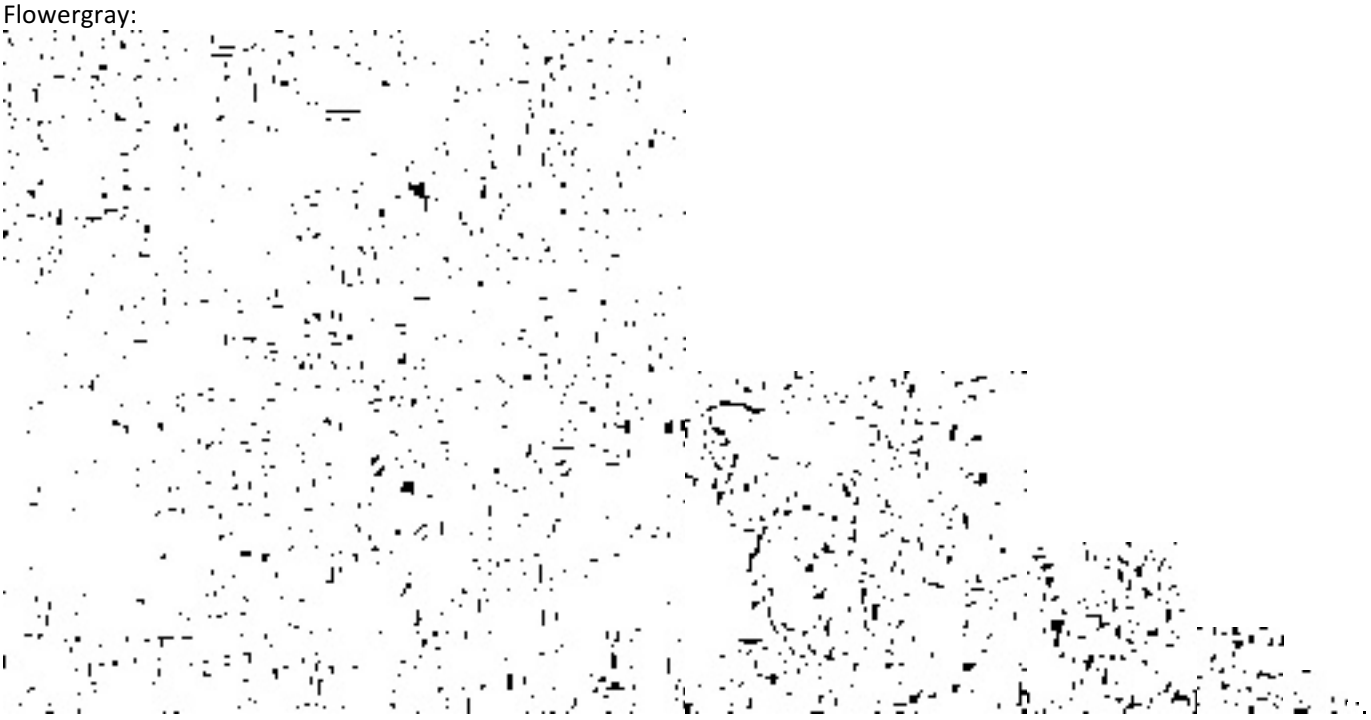
Text:



Step3 Detect zero crossing

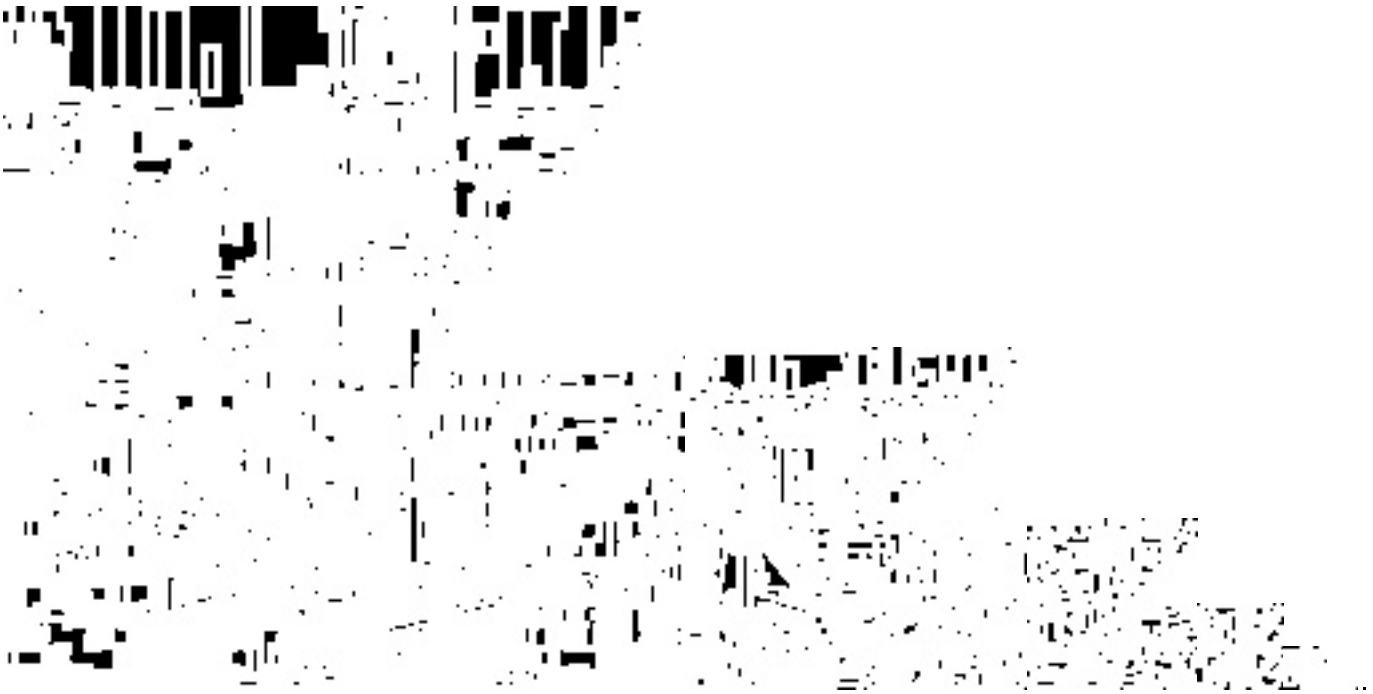
Cartoon:

Flowergray:

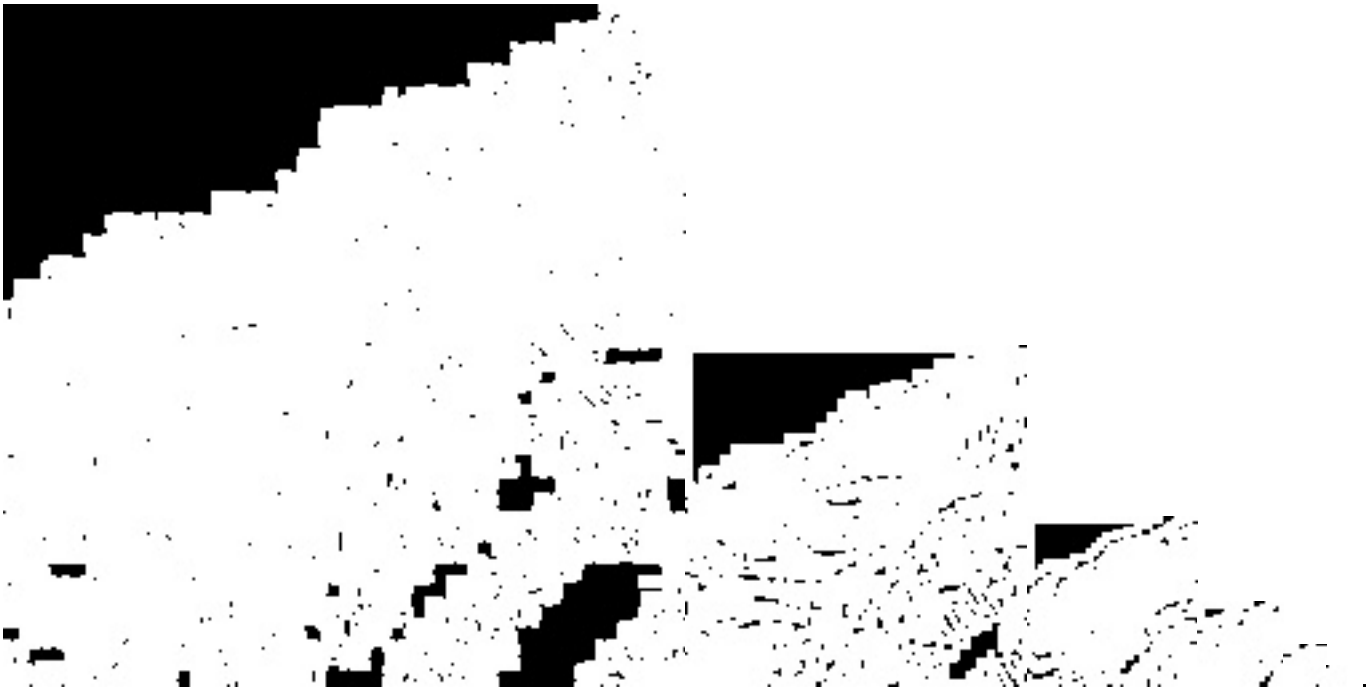


Kitty:

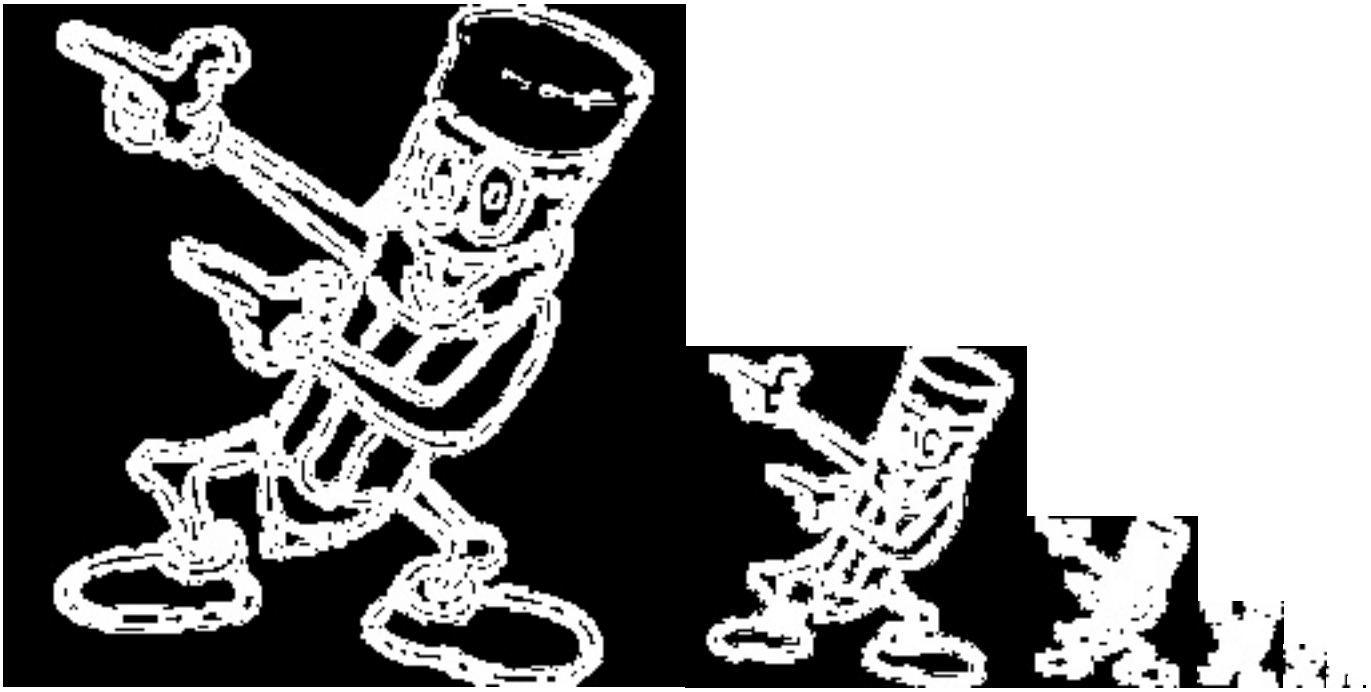
Polarcities:



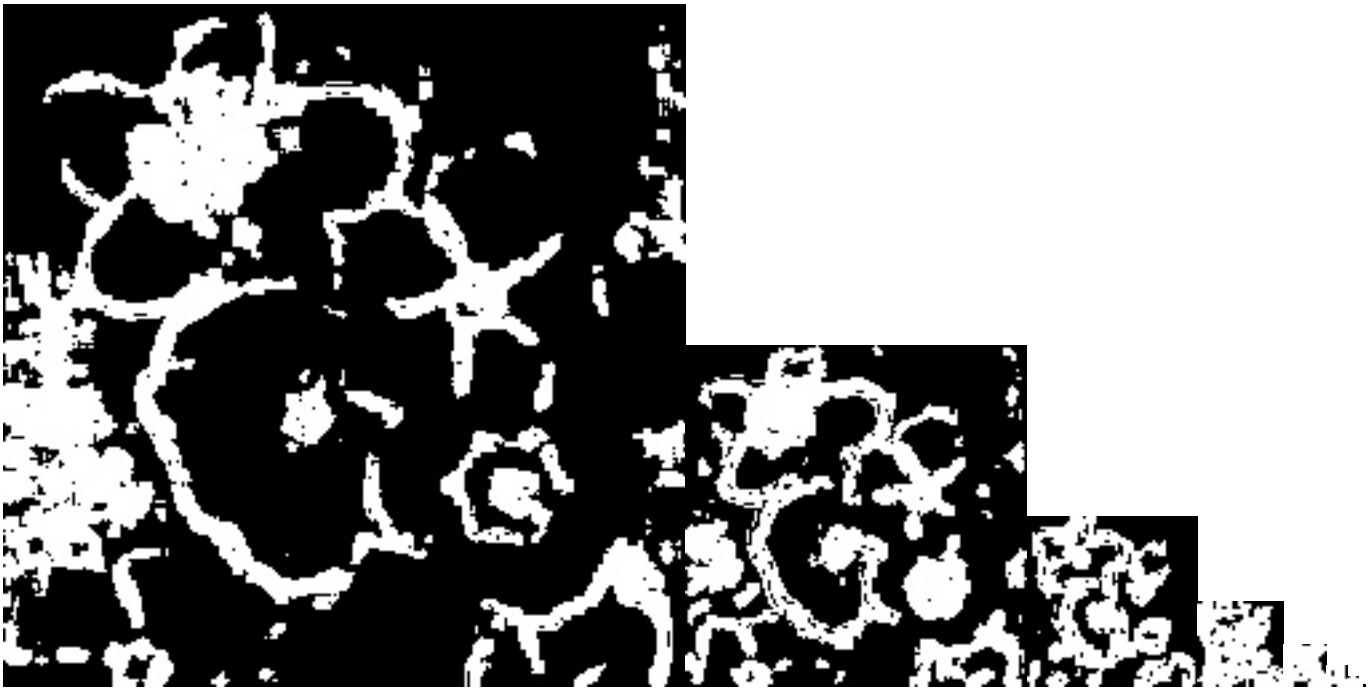
Text:



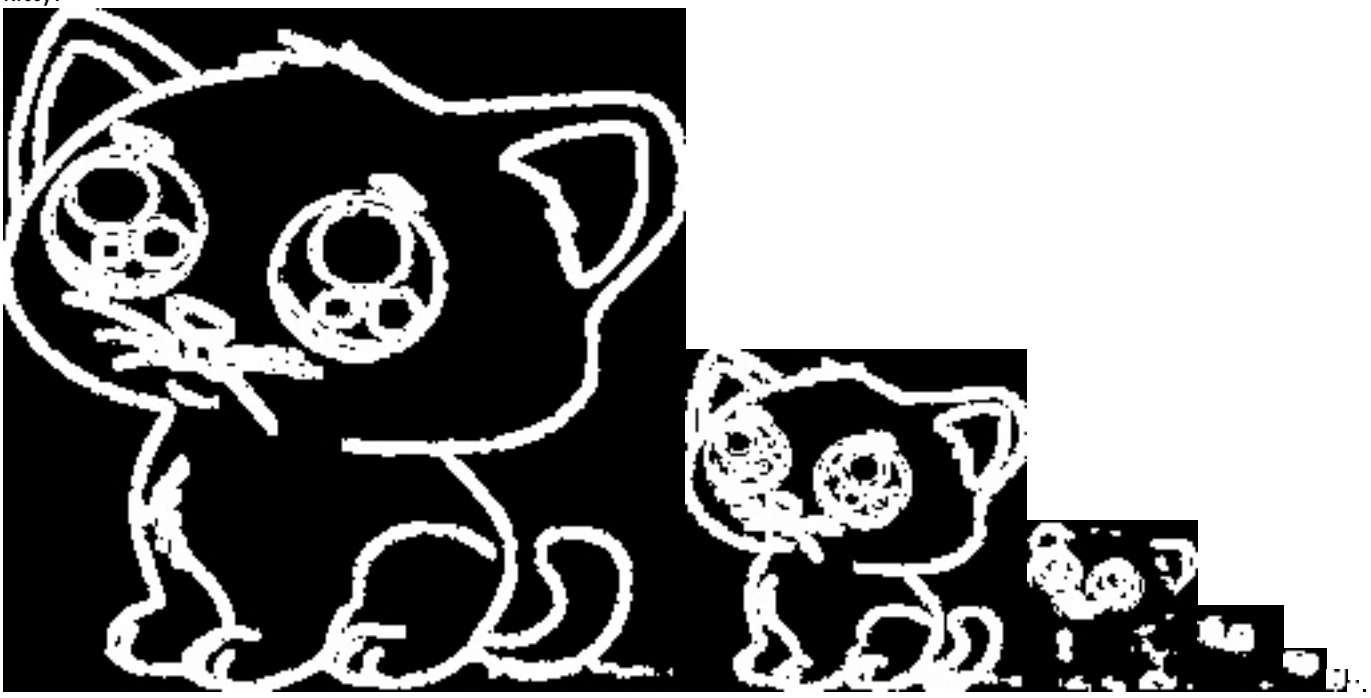
Step4 Examine
Cartoon:



flowergray:

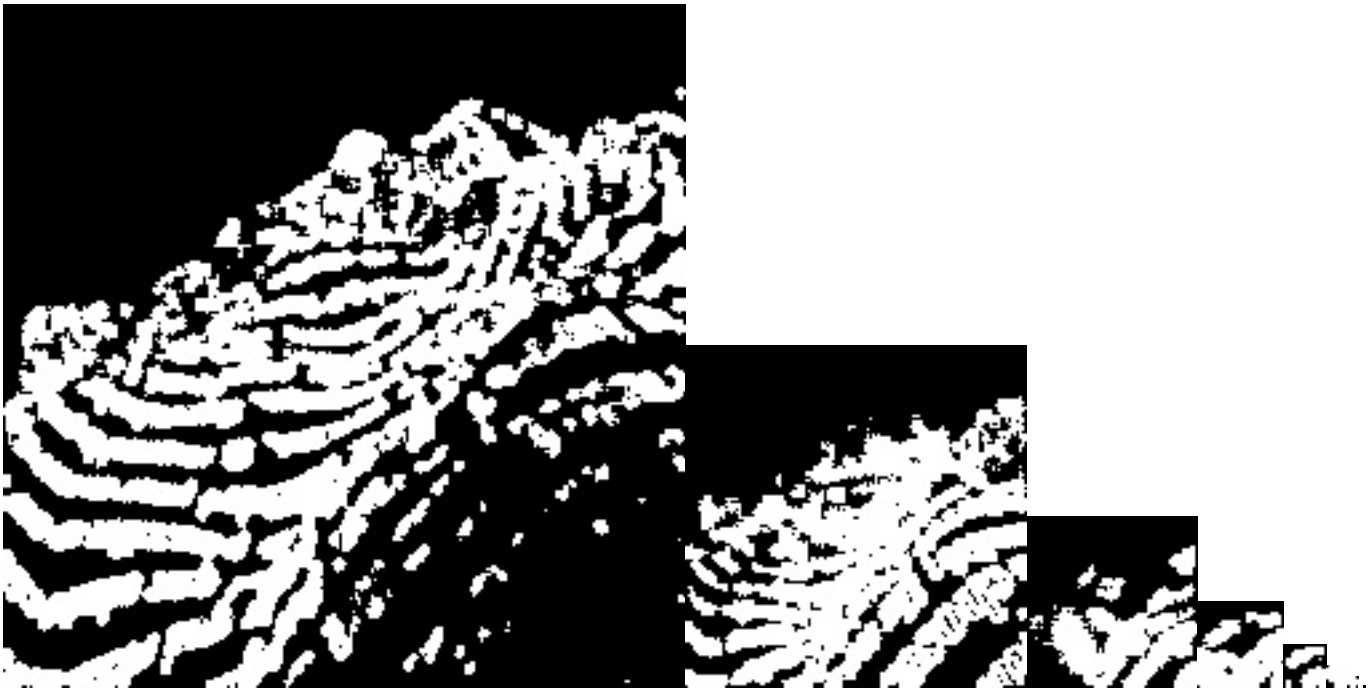


kitty:



Polarcities:

text:



Part2: Contrast Enhancement

Original image:

After histogram enhancement:

Part3: Median Filter for Noise Removal
Original

2*2

3*3

4*4

6*6

If the size is not big enough, the noise will not be removed clearly. If we varying the size to bigger, the image looks more blurred.