ECE 6310 – **Lab5** Name: **Atef Emran**

Active Contour

Summary

In this project active contour algorithm is implemented. The program must load a grayscale PPM image and a list of contour points. The contour points must be processed through the active contour algorithm. The program must output a copy of the image with the initial contour drawn on top of it, and a second image with the final contour drawn on top of it. The program must also output a list of the final contour pixel coordinates.

Implementation and Results

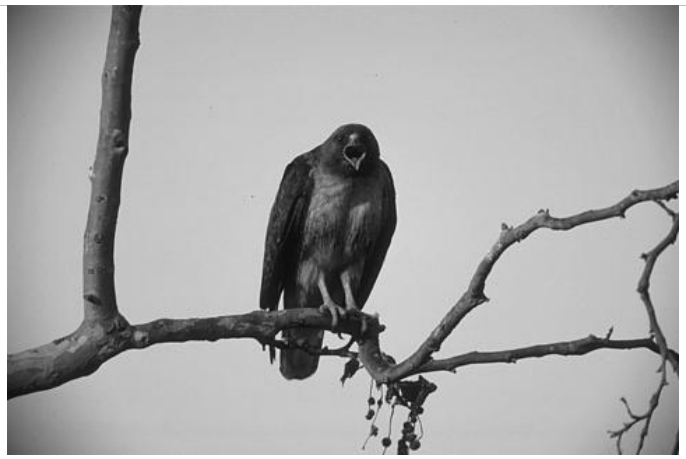
The program executes these major steps:

0. Reading the input files from the argument line
1. Drawing the contour points
2. Execute Sobel Filter
3. Executing the active contour operations
   [3.0] average distance between all contour points
   [3.1] calculating the energies pixel by pixel in the window surrounding the contour point
   [3.2] Normalizing the energies values
   [3.3] adding the normalized energies
   [3.4] capturing the minimum energy coordinates in the window, and updating the contour coordinates
4. Exporting the output image and contour txt

The tunning parameters used are:

- Window = 7
- internal energy 1 weight = 1
- internal energy 2 weight = 1
- external energy weight = 0.7

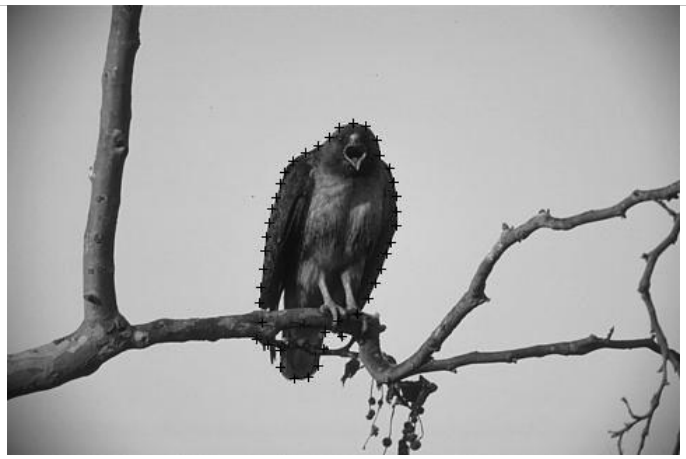
The results are as follows:



Input image

Initial contour image

Sobel filter



Final contour output image

And the final contours are as follows:

266 107
273 116
276 126
278 136
278 147
278 157
274 169
271 177
267 188
263 198
258 209
250 220
236 225
239 236
227 233
226 245
222 257
215 265
205 266
195 258
195 246
186 242
178 238
182 226
180 212
181 201
183 188
184 175
185 165

187 155
189 145
192 137
195 127
198 119
204 111
213 105
222 100
230 94
237 87
247 84
256 86
264 96

Instructions

To run the program excutable [input_image.ppm] [points.txt]