Rohan Pathak

UB Person # 50247125

CSE 573 - Homework 2

Scale-space blob detection

Comparison of "inefficient" and "efficient" methods

The running time for the "inefficient" method is significantly higher than the running time for the efficient method. In my implementation, the former took around 6 seconds to complete (with lower number of scales) while the latter took around 0.5 seconds to complete (with almost double the number of scales).

For the "inefficient" method, the number of levels had to be reduced significantly to produce the output in feasible time.

The outputs did not vary significantly in accuracy. However, considering the fact that the "inefficient" method was ran over a lesser number of scale space and it still produced almost similar outputs, it can be concluded that the "inefficient" method is slightly more accurate than the "efficient" method as it has optimal sampling. However, it cannot be applied in real time as it's runtime is far longer than the "efficient" method.

Interesting implementations

I have tried to implement an adaptive threshold that calculates the threshold for each scale using 'multithresh' function which uses Otsu's method to calculate local threshold.

Variation of Parameters

I have tried varying initial sigma from 1 to 2.5 and k from 1 to 2 and n from 10 to 15.
Varying n did not have any significant changes in the output.
Better outputs were obtained by increasing k and an optimum output was obtained with k = 2.
Increasing the initial scale size decreased the accuracy of the output and optimum output was obtained at initial sigma = 1.5.