Read Me for Code Implementing 'Learning Gestalt Laws'

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Note : No part of the code is taken from anywhere(except SVM). The algorithms and their implementation are original. Please take note of the same.

1 Reference

Please find the following files along with this Readme

- problem.zip containing database
- Gestalt.cs and Constant.cs - the main implementation file

2 Requirement

In order to run this code you need the following things -

- C# compiler
- Matlab or any other implementation of Support Vector Machine (SVM)
- EmguCV : opencv implementation for C# with more features

3 Run the Code

We ran the code on Visual Studio 2010 on Microsoft Windows 7 platform (32bit). The compilation for Visual Studio is easy -

- Install VisualStudion 2010 and create a new project. Add Emgu.CV file under the reference section

- Save the Gestalt.cs and Constant.cs file in the reference section under Solution Explorer tab
- Save the database (problems folder) in the required section (default : C:/dataset/)
- Compile the code which will generate a result.txt file in C:/dataset/
- Use the results of result.txt file to run SVM on Matlab using svmtrain and svmclassify

4 Output of Result.txt

Result.txt file contains the four complexity feature for a new image. The first two are for constant color law while the last two are for continuity law. Within each law the first value is the constant color feature while the second value is the continuity law feature. The first column denotes the problems number while the rest 4 contain the complexity features.

5 Parameter Tweaking

Most parameters are defined in Constant.cs . These are parameters required by algorithm. The non-algorithmic parameters such as default directory location can be tweaked directly in the Main function. This should not be difficult- just locate the directory location and change it accordingly. The location of result.txt can also be changed.

6 How to use SVM

You get the four columns of the result. Further you can use the ground truth from either some survey or the way we did it by using the objects used to make the drawing as the ground truth. Now given the ground truths we compute two features one for each law - C and T. Where C is for constant colour law and T is for continuity law. C will be the sum of first two columns while T will be the sum of last two columns. Given two parameters C and T and ground truth we can use svmtrain and svmclassify facilities of matlab to train on the training data (use 40% of the data). Test on the remaining data and see the accuracy.

7 Possible Issues

7.1 Stack Overfull error

On some images there can be a stack overfull error. This is most possibly if the search space has exceeded to boundaries which cannot be fit in the RAM. In such cases either you can stop the function and move onto next image and counting a false answer on this image or you can free some RAM and continue with the answer.