

Happy, Sad, Mischevious or Mad?

Due Tuesday November 3, 2009

1 Reading faces

Notwithstanding Lady Ga Ga, most of us do not wear ‘poker faces’ and through looking at us one may get a basic read on our emotional state. Let’s try to give a computer this capability. As any cartoonist knows, the angle of the eyebrows and curve of the lips may indicate emotional state. Figure 1 shows four basic emotional states: happy, sad, mischievous and mad.

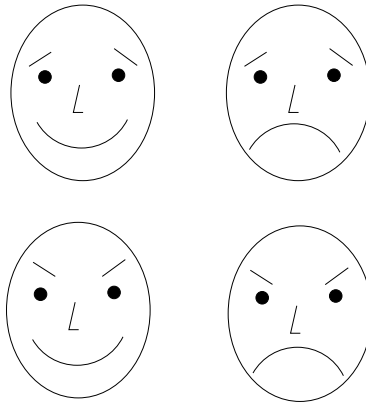


Figure 1: Four basic emotions.

2 Assignment

In this assignment you are recommended to build a **perceptron** based classification system that guesses the emotional state of faces presented as input. The inputs are 20×20 bit maps with 32 gray levels from white to black. The bit map in figure 2 shows a mischievous face.

You shall be given 100 such images to train your system on. The file format is straight forward and these examples are in the file `training.dat` provided on the web-site. Your system must be able to accept input files of this format, and must write to standard output the classification values for each image id. For example:



Figure 2: A mischevious face bit map.

```
Image1 1  
Image2 3  
Image3 2  
...
```

Where 1 means 'happy', 2 means 'sad', 3 means 'mischevious' and 4 means 'mad'. See the file `correct.dat` on the course web-site for the correct classifications of the training set.

After you have trained your systems over the training set, we shall run your programs over 100 test images to see how accurately your perceptron classifies faces. This test set was randomly drawn from the same population as the training set.

3 What to hand in

You should hand in a complete and well-written report in the box marked 'Artificial Intelligence' on the fourth floor of MIT-Huset before 11:59 pm on the due date. Please consult <http://www.cs.umu.se/information/rapportguide.html> for guidelines on how to write this report.

Your report may be brief, but please be extra careful to explain the location and how to run your program. For Unix based programs we ask that your program be run from the command line by typing `classify test.dat` where `test.dat` is the file that encodes images and the results of these classifications are output in the above form to standard output.

Please place your compiled code in `~/edu/ai/lab3/` of one of the members of your group and identify this group member in your report.