

Lab 3 - Experimenting, Tonality, and Tempo

Wednesday, July 23, 2008
12:55 PM

PURPOSE

As we anecdotally observed in yesterday's lab, several parameters can affect the quality of our classifications.

1. Audio files used in the training data sets.
2. Features used in training / testing.
3. Use of scaling for features.
4. The size of the frames extracted from the audio.

We'll gain an intuitive feel for each of the effect of each of these parameters by trying some simple experiments.

Afterwards, we'll dive into a lab on extracting **tonal** information from you audio streams.

SECTION 1 - A couple of more experiments...

If you haven't yet finished your previous lab and received basic outputs from your knn classifier, now is the time to finish it up. If you need help, ask Jay or another Matlab-enthusiast for assistance...

Did you notice how not all of the Test Kicks and Test Snares files were properly classified?

1. Using the "Test Snares" folder and the default settings (frame = whole file, 5 features, use scaling, default test set), write down the accuracy. (Accuracy = number of correctly labeled files / total number of tiles)
2. Re-train and re-test using only 4 features: ZCR , Centroid , Bandwidth, and Skew. What's the accuracy now?
3. Re-train and re-test, using only 2 features : ZCR and Centroid. What's the accuracy? (It should be good.)
4. Finally, instead of feature extracting the ENTIRE audio file for training and testing, let's use only the first 100 ms of the audio file for our analysis. Rerun and examine the accuracy - does this help?
5. Re-train and re-test WITHOUT scaling or re-scaling your features. Leave them "raw". Run your analysis on the Test Snares folder and observe the results. Are you able to tell that scaling is turned off?

OK. Turn scaling back on. You don't want to leave it off accidentally.

Now that you're done, take a moment of clean-up your previous code so that it's reasonably neat and well-organized. [Ah, that's better.] We'll need this later, when we start using different classifiers.

SECTION 2 - Tonality Extraction using MIR Toolbox

Download the folder `\usr\ccrma\courses\mir2008\lab3\Tonality`

This folder contains:

| | |
|--------------------------|---|
| demo7tonality.pdf | These are your instructions for this section of the lab. Ideally, you can do everything in this lab using this PDF and the MIRToolbox Guide. |
| | However, if you really |

| | |
|-----------------|---|
| | need additional assistance or really need to see the examples used in context, you can see the below .m file for examples. |
| demo7tonality.m | Only if you need to see some examples... |

Audio files that you need for the lab are also stored in the Tonality folder.

OPTIONAL - Detecting tempo using MIR Toolbox

A few people have asked about more information on tempo extraction... so this should help. This is NOT required, but only if you have time.

Download the folder and the labs contained in :
 \usr\ccrma\courses\mir2008\lab3\Tempo

The PDF has the instructions....

Enjoy....

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