Wekinator Lab - 2011

Installation & Setup for personal laptops:
Download the Wekinator appropriate for your operating system (OS X or Windows) from http://code.google.com/p/wekinator/downloads/list
Unzip it.

If you're running on a CCRMA machine, plug in a mic, turn up its gain to 11:00 or so, open a terminal window, and type the command "jackd" to start the jack server. In another terminal window, type the command "sndpeek" to check that you're getting input from the mic.

Running the Wekinator

Take a look at the Wekinator "quick and easy" walkthrough instructions at http://wiki.cs.princeton.edu/index.php/ChucK/Wekinator/Instructions#Quick_and_easy_walkthrough_for_Mac_OS_X
or
http://wiki.cs.princeton.edu/index.php/ChucK/Wekinator/Instructions#Quick_and_easy_walkthrough_for_Windows
and use these as a reference to get started.

Doing some real-time MIR

In the ChucK and OSC setup (part 1 of the walkthrough), choose a ChucK synthesis module to get started. (The example synths live in the directory project/chuck/synths/.) For starters, try simple_beats.ck (or simple_beats_osx.ck if you're on OS X; this is a simple drum machine), adaptive_audio_pan.ck (pans the audio input according to the class), or bowed_physmod.ck (controls a physical model of a bowed string instrument).

Once you've chosen your synth, hit "Run" to run ChucK.

In the "Features Setup" tab, choose one or more audio features to use to control your synth. If you're using your voice as input, try starting with only spectral centroid. If you don't have a microphone & headphones, the motion sensor works well on a Mac, and the edge tracker or color tracker often work well on windows.

Note to windows users:
Note that you have to launch either of these webcam extractors manually by double-clicking on [Directory where you downloaded

Follow the instructions for the rest of the walkthrough to control your chosen synth with your chosen audio features.

Experimentation
1. Experiment with different features. What sorts of things can you learn from only spectral centroid? From the raw FFT bins? (Hint: keep your FFT size equal to 512 or less, and make it a power of 2. Try, e.g., 8, 64, and 128.)
2. Experiment with different classifiers. Try creating a learning problem where kNN does better than AdaBoost.M1, and another problem where AdaBoost.M1 does better than kNN.

Using Wekinator with Max/MSP (Optional)
Wekinator can receive feature vectors from any other feature extractor, and it can send its outputs to control any other synthesis environment, all using the OpenSoundControl protocol.

For example, if you're a Max user and have Max installed, take a look in the OtherExamples folder in the Wekinator download, and you'll find a couple Max feature extractors (e.g., tjanalyzer_feature_extractor.maxpat) and a Max synth patch (blotar_synth.maxpat). To use these, you'll also have to have the following objects installed in Max:
- udpsend and udpreceive: bundled with Max 4.6+, also available here: http://archive.cnmat.berkeley.edu/OpenSoundControl/Max/
- OpenSoundControl: http://cnmat.berkeley.edu/downloads
- blotar: http://www.music.columbia.edu/percolate/
- analyzer~: from http://web.media.mit.edu/~tristan/maxmsp.html

In order to use the tjanalyzer **feature extractor** patch, you'll need to specify 9 OSC features on the "Feature Setup" pane. You'll also need to run the Max patch and select "audio" as the input from the drop-down menu in the top left of the patch.

In order to use the blotar **synthesis** patch, you'll need to set up Wekinator to use an OSC synth with 9 continuous (real-valued) parameters. This happens after launching the Wekinator: hit "Edit ChucK configuration" then "Synthesis (output)" then "Use a different Max/OSC synth" then "Configure." Add 9 parameters and make **none** of them discrete. Then hit OK and run chuck as usual.

See http://wiki.cs.princeton.edu/index.php/ChucK/Wekinator/Instructions for more instructions and information.