A6: What Tone Is It?

Introduction

Now that you've looked at creating tones, it's time to do the inverse — examining how to detect DTMF tones. To simplify your task, we will return to Max/MSP (this time using the "MSP" side of things).

Task

Build a Max/MSP patch that detects DTMF tones. It should be able to detect which tones are played using the ToneGenerator java program that is provided (based on an applet at dsptutor).

ToneGenerator outputs DTMF tones to the speakers — in order to redirect it to the audio input, open up the System Preferences and the Sound tab. Change the output and input to Sunflower 2ch, and this will redirect all system output to the system input driver (as if you attached a physical cable connecting line out to line in on the computer).

In Max/MSP, use the `adc~` module to get the input audio signal from the system.

For this assignment, you should use the `fiddle~` module. `fiddle~` is a patch originally by Miller Puckette for pitch detection and sinusoidal decomposition.

Answer the following question:

1. Explain briefly, in your own words, how the `fiddle~` object works.

Additional Credit

Credit above 2.0 will be awarded for one or more of the following:

- Robustness to noise — for example, if you introduce random noise to the input signal, does it generate false tones?

- Accurately track the timing of the ones. If I press "1" only once, it should print out only one "1".

Submission

Submit a zip archive of your Xcode project to **eric@cs.rwth-aachen.de** by **Sunday, December 10, 2006 at 23:59**. The subject of your email should be "**M3 Assignment 6**"; be sure to use this **exact** subject line as it will be used to filter assignment submissions for grading. You should also include a README file (plain text or pdf) that includes the names of you and your group member(s), a brief summary of what you accomplished, and answers to the above questions.

It is strongly recommended that you test your submission before sending it to us. If we cannot figure how to open your submission (strange or non-obvious compression format, no README file) your assignment will be automatically returned to you without a grade.

Late assignments will be graded with a penalty of 0.5 per 24 hour period after the due date.