

DIS2PROJECT

June 12, 2006

Squeeze-A-Tune (1st Prize 2005)

A new input device for creating music with the help of a computer. It is a flexible, cylindrical device that produces sound when it is pressed or bent. Users can use it to play a song, create some experimental musics or just have fun playing around with it.



New Interface for Musical Expression Introduction

In recent years, a small community of musicians, composers, and technologists have come together to share their efforts in advancing computer music. One result of these efforts is the International Conference on New Interfaces for Musical Expression (NIME). Starting out as just a small workshop as part of the Conference on Human Factors in Computing Systems (CHI) in 2001, the conference grew to over 200 participants from all over the world. In 2005, Nime featured a bagpipe-playing robot, music generated from movements of water, and of course Bangarama, the winner of the DIS2 2004 competition for creating music with handbanging gestures.



kGuitar (left - 2nd Place 2005)

Use an ordinary keyboard to simulate a guitar. The keyboard is held upside down in front of your belly. With the left hand you can hit the function keys to select a chord. With the right hand you can hit the arrow keys (up or down) to strike the selected chord.

Hop-A-Tone (below - 3rd Prize 2005)

Creating music usually involves using your mouth, arms or digits. Wouldn't it be an interesting experience to create music with just your feet for a change? By using a dance mat, you can select the rhythms of your choice and can accompany the background beats with your own musical composition.



Goals & Description

The goal of this project is for you to create a new musical instrument, using the tools we provide. Both “music” and “instrument” are defined rather loosely in this context. “Music” can be any sound, from raw audio frequencies to MIDI notes. An “instrument” is, in this case, a computer interface. The part that you should really focus on is the interface, in particular it must satisfy the following criteria:

- your instrument should produce sound when used
- there is some non-trivial mapping between user input and the audio

- if someone had the time to practice with your interface, he/she would eventually be able to produce music out of it

Our hope is for you to combine what you have learned in Designing Interactive Systems I together with the technical aspects of this course. Thus, it is strongly recommended that you review the first few lectures from DIS 1, especially concepts such as mappings, affordances and constraints.

For this project, we ask that you use Max/MSP/Jitter/Cyclops (<http://www.cycling74.com>) or PD (<http://cra.ucsd.edu/~msp/>). These tools are particularly good for manipulating audio. Both are available for you to use in the lab, and the software can be installed on your own personal computer. Max/MSP is free to use for 30 days, and PD is

free. Both are available for multiple platforms. We recommend Max/MSP since it is better documented, but we leave the choice up to you.

In any case, you must be prepared to demo your project in the lab, either by running it on a lab machine, or bringing your own machine.

You are encouraged to use external devices for input/output other than the mouse and keyboard (or at least use them in an innovative way). All of our resources are available for you to use on a **first-come, first-served basis**, including the smart boards, infrared batons, biofeedback device (Heart Rate & GSR), gyromouse, iStuff and Teleo hardware devices. You are also encouraged to scour the internet for patches and modules other people have written and incorporate it into your project; however, be sure to cite and credit your sources! Over the next few weeks, we will try to assemble a list of helpful links for Max/MSP and PD and post them on the class website. If you find anything useful, please email David and he will add it to the list.

Credit will be awarded for especially creative ideas, so try to have some fun with this assignment. A creative project that does not work so well will receive a higher grade than a project that works well but is not particularly exciting.

For this project, you are allowed to work in groups of two or three, and you may work with anyone you like. If you do not have a partner by the end of the week, you will be assigned to a group at our discretion.

Schedule and Deliverables

June 19, 2006 (lab time)

One page project proposal in webpage format. Submit to holman@cs.rwth-aachen.de, subject: DIS2 project proposal. Use your lab account to host the webpage on the chair's server.

During lab time, we will have a design session reviewing your proposal. Also, we will determine

which technologies you are planning to incorporate in your instrument.

June 26, 2006 (lab time)

At this point, you should have something working and be able to show it during lab hours.

July 3, 2006 (lab time)

Be prepared to show a more advanced prototype of your instrument.

July 10, 2006 (lab time)

Project presentations (in class), final project write-up (website) due.

The final deliverable will include a website which documents your work. Please remember that the project will comprise 20% of your grade, so do not take it lightly or wait until the last minute! You may want to take a look at last year's projects for inspiration*, or what other innovative music controllers people have built (<http://nime.org>).

Grading

Your final project grade will be determined roughly as follows:

Prototypes: 10%
Interface: 20%
Technical Implementation: 20%
Creativity: 15%
Website: 15%
Presentation: 20%

The following is a brief explanation for each item:

Prototype: Based on the prototypes and interim progress reports that you show during the lab on the above dates.

Interface: Does it satisfy the requirements as specified in the project description? How expressive is your instrument? What is the "communication bandwidth" between the user and the instrument? What kind of modalities does it support (auditory, visual, haptic)? Do you support any non-traditional interaction methods?

Technical implementation: What features of Max/MSP/Jitter/Cyclops did you use? How much depth/detail did you go into in your implementation? If you have a particularly/elegant/innovative/well-designed/robust implementation, you will get points here.

Creativity: How unique is your idea? Does something similar already exist?

Website: Clarity and completeness of your website.

Presentation: Project presentation on July 10.