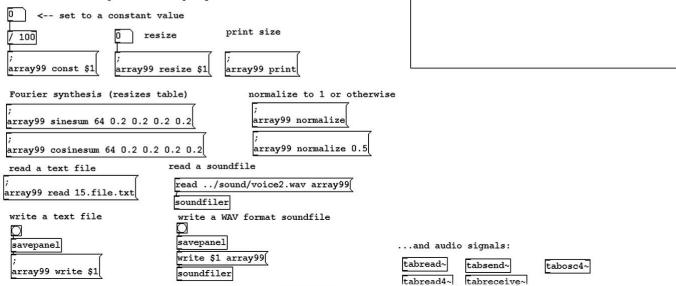**ARRAYS**

Arrays in Pd provide a unified way to deal with lists of
numbers, treating them as either audio samples or for
"control" uses. To make one, select "array" on the "new"
menu. Dialogs appear to help you choose the name, number of
elements, and various flags.

You can also change the array size using the "resize"
message shown below. Arrays live in graphs and graphs may
hold more than one array--however, graphs containing more
than one array won't know how to readjust themselves
automatically when the arrays are resized.

You can send messages to an array object:

| 0 | <-- set to a constant value

| / 100 | | 0 | resize   print size

;
array99 const $1   ;
                          array99 resize $1   ;
                                                     array99 print

Fourier synthesis (resizes table)   normalize to 1 or otherwise

;
array99 sinesum 64 0.2 0.2 0.2 0.2   ;
                                            array99 normalize

;
array99 cosinesum 64 0.2 0.2 0.2 0.2   ;
                                              array99 normalize 0.5

read a text file   read a soundfile

;
array99 read 15.file.txt   read ../sound/voice2.wav array99

                                  soundfiler

write a text file   write a WAV format soundfile

| ◻ | | ◻ |

savepanel   savepanel

;   write $1 array99
array99 write $1

                          soundfiler   ...and audio signals:

                                                             | tabread~ | | tabsend~ | | tabosc4~ |

                                                             | tabread4~ | | tabreceive~ |

array99

Audio & Video Multi-Source Mixing and Streaming: Hack the Media
Ramiro Cosentino

Introduction

It is well known and still true today that information is manipulated by private media corporations and even governmental institutions under pressure from private groups pursuing their own economic interests and oriented to the harmful capitalist system. Because they obviously seek to control the masses, there is a need for free and open ways of providing horizontal communication relationships, which could enable the development of a truly participative system of social and political construction, modeling, deconstruction and re-creation.

This is the premise on which my work is based.

Global Audio & Video Content Production and Distribution

Considering the saying "a picture says more than a thousand words" leads to the idea that audiovisual contents could result in a much richer resource than just written, legible text. We are happily entering the post-textual era.

This is the context, from which the al-Jwarizmi project emerged (<http://al-jwarizmi.sf.net>). It is the collaborative work of around seven people, who are part of the hackitectura.net crew.

The need for participation requires converting passive users (consumers) into active producers, thus achieving a two-way or even multi-way interaction between them and others. Here is where Pd enters the scene, as a powerful and flexible tool for developing the desired platforms for these kinds of communication methods.

Art as an expression of feelings and/or thoughts, and the wish of bringing it closer to other people reinforces the statement about globally distributing contents produced anywhere around the globe. Then the conjunction of Pd plus streaming technologies seems to serve as the core basis for this communication platform and as a way of connecting people and cultures that we call: al-Jwarizmi.

As stated in the al-Jwarizmi FAQ, if we regard TV as a failed cultural project, we should seriously think about replacing TV and even radio, or at least re-creating them with the help of new technologies.

However, this replacement or re-creation is mostly intended to re-think the concept of these mass communication tools, and direct their use towards a cultural resource for learning and promoting positive social changes.
That means this project does not really aim to completely suppress TV or radio, but to achieve a better interfacing of Internet streaming technologies with them, to reach a wider audience where the Internet cannot or bandwidth is not sufficient.

We can imagine tuning into a netradio from Angola from the studios of a regular FM station somewhere else and the stream being re-broadcasted over FM waves locally on another continent.

This interfacing will help the treatment of well known issues of the digital divide and thus help develop solutions.

Worldwide Distributed Participation

In my honest opinion, no one should be forced to participate, but everyone must have access to the possibility, in order to achieve a global balance. Otherwise only some will take part and make decisions for others.

In CorveraHack event (Asturias, Spain 2003) we experimented with provisioning a webform posting with a PHP script, which sent us text that the users were able post to the NOC (Network Operations Center). There it was merged with the video render windows which were being streamed out.

In short: people watching the audiovisual stream could post feedback through a webform, and a few seconds later (because of net delays) they could see it on their streaming window.

Re-Broadcasting Others' Contents

To ensure the freedom of information, as stated in the first item of the hacker ethic, we propose that the same idea is to be applied to media.

"The belief that information-sharing is a powerful positive good, and that it is an ethical duty of hackers to share their expertise by writing free (libre) software and facilitating access to information and computing resources wherever possible."
(taken from <http://en.wikipedia.org/wiki/Hacker_ethic>)

Facilitating the free flow of media for topics of interest will support their conceptors, produc-

ers and distributors, so I strongly believe in the need for this idea of redistribution as a way of freeing the contents, thinking about them as pieces of information.

Audioflow & Videoflow Patches Overview

I have made two patches for Pd with the basic function of mixing several sources into one final mix to play locally and to stream it out to the Net.

Both of them are able to send the final mix directly to other peers running Pd and any patch capable of receiving peer2peer audio (using [mp3streamin~]) or video (using [pdp_i]). [Audioflow] and [Videoflow] can also receive peer2peer audio and video respectively.

In a typical environment where there are hosts connected to the same LAN or other fast network, each [Videoflow] and [Audioflow] can be hooked together with others. This results in a wide network of distributed content production.

[Audioflow] is also capable of tuning into two MP3 and two OGG streamings at the same time and mixing them with another source, such as the aforementioned p2p, hard disc OGG audio files and live soundcard inputs.

[Videoflow] is very similar to [Audioflow].

Several experiments with mixing multiple audio and video sources and also rebroadcasting remote streams have been done by myself and others. And better yet, a lot more will come :)

This paper was written as an overview of my talk/presentation at the Graz Pd~Convention, which took place from September 27th to October 3rd, 2004.