Marsyas Cookbook

For version 0.2

Music **A**nalysis **R**etrieval and **SY**nthesis for **A**udio **S**ignals

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1 Playing a sound file

Problem:

You want to play an audio file using Marsyas

Solution

Put a SoundFileSoure and a AudioSink inside of a Series object.

Discussion

To do this, you just need to put a SoundFileSoure and a AudioSink inside of a Series object.

You then will set the filename of the SoundFileSource with:

```
playbacknet->updctrl("SoundFileSource/src/mrs_string/filename",inAudioFileName);
```

And initialize the audio:

```
playbacknet->updctrl("AudioSink/dest/mrs_bool/initAudio", true);
```

You then just tick the network until all the frames have finished playing:

```
while (playbacknet->getctrl("SoundFileSource/src/mrs_bool/hasData")->isTrue())
{
  playbacknet->tick();
}
```

The network will look like:

```
- Series
   - SoundFileSource
   - AudioSink
```

The code will look like:

```
MarSystem* playbacknet = mng.create("Series", "playbacknet");
playbacknet->addMarSystem(mng.create("SoundFileSource", "src"));
playbacknet->addMarSystem(mng.create("Gain", "gt"));
playbacknet->addMarSystem(mng.create("AudioSink", "dest"));

// Set the SoundFileName
playbacknet->updctrl("SoundFileSource/src/mrs_string/filename",inAudioFileName);

// Turn on the audio output
playbacknet->updctrl("AudioSink/dest/mrs_bool/initAudio", true);

while (playbacknet->getctrl("SoundFileSource/src/mrs_bool/hasData")->isTrue())
{
   playbacknet->tick();
}
```

2 Read in and write out a soundfile

Problem

You want to read in a sound file and write out the same sound file.

Solution

Use a SoundFileSource to read in the audio file, and put it into a Series, then add a SoundFileSink to the Series.

Discussion

This recipe is similar to the one given above, where you want to read in an audiofile and play it on your speakers, but in this case you want to output it to another audio file. This is the basic building block of a number of different audio processing applications, you would just put your processing code in between the SoundFileSource and SoundFileSink:

```
MarSystemManager mng;

// create playback network with source-gain-dest
MarSystem* playbacknet = mng.create("Series", "playbacknet");
playbacknet->addMarSystem(mng.create("SoundFileSource", "src"));
playbacknet->addMarSystem(mng.create("SoundFileSink", "dest"));

playbacknet->updctrl("SoundFileSource/src/mrs_string/filename",inAudioFileName);
playbacknet->updctrl("SoundFileSink/dest/mrs_string/filename",outAudioFileName);

while (playbacknet->getctrl("SoundFileSource/src/mrs_bool/hasData")->isTrue()) {
 playbacknet->tick();
}
```

3 Playing multiple sound files at once

Problem

You want to output multiple sound files to the audio device on your system all at the same time.

Solution

Make a network with SoundFileSources and put all these SoundFileSources inside a Fanout.

Discussion

To do this, you need a network with SoundFileSources for each of the input sources. You then put all these SoundFileSources inside a Fanout, this will play all the sound files simultaneously.

The output of the Fanout is a stacked array of all the data from the audio files, you need to combine these together using a Sum object.

Finally, you output all of them to an AudioSink

The network will look like:

```
- Series
  - Fanout
    - SoundFileSource
    - SoundFileSource
    - SoundFileSource
  - Sum
  - AudioSink
```

The code will look like:

```
MarSystemManager mng;
MarSystem* playbacknet = mng.create("Series", "playbacknet");
MarSystem* fanout = mng.create("Fanout", "fanout");

// Create the SoundFileSources
fanout->addMarSystem(mng.create("SoundFileSource", "src1"));
fanout->addMarSystem(mng.create("SoundFileSource", "src2"));
fanout->addMarSystem(mng.create("SoundFileSource", "src3"));

// Assign filenames to the SoundFileSources
fanout->updctrl("SoundFileSource/src1/mrs_string/filename",file1);
fanout->updctrl("SoundFileSource/src2/mrs_string/filename",file2);
fanout->updctrl("SoundFileSource/src3/mrs_string/filename",file3);

// Add the fanout to the main network
playbacknet->addMarSystem(fanout);

// Sum up all of the fanouts
playbacknet->addMarSystem(mng.create("Sum", "sum"));
```

```
// Create the output file which is a SoundFileSink
playbacknet->addMarSystem(mng.create("AudioSink", "dest"));
playbacknet->updctrl("AudioSink/dest/mrs_bool/initAudio", true);

while (!done) {
  playbacknet->tick();
}
```

4 Look at your network

Problem

You are having trouble figuring out what is going wrong in your network and you want to look at your network to find out what is going wrong

Solution

Use the stream redirection operator with cout

Discussion

It's really simple to output your whole network, you just go:

```
MarSystemManager mng;
MarSystem* net = mng.create("Series", "net");

cout << *net;
```

All of the components of the network, and the state of all their controls will be written to the standard output.

If the format is too hard to understand, try using put_html:

```
net->put_html(cout);
```

Which has some nifty javascript to hide and show different parts of your network.

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