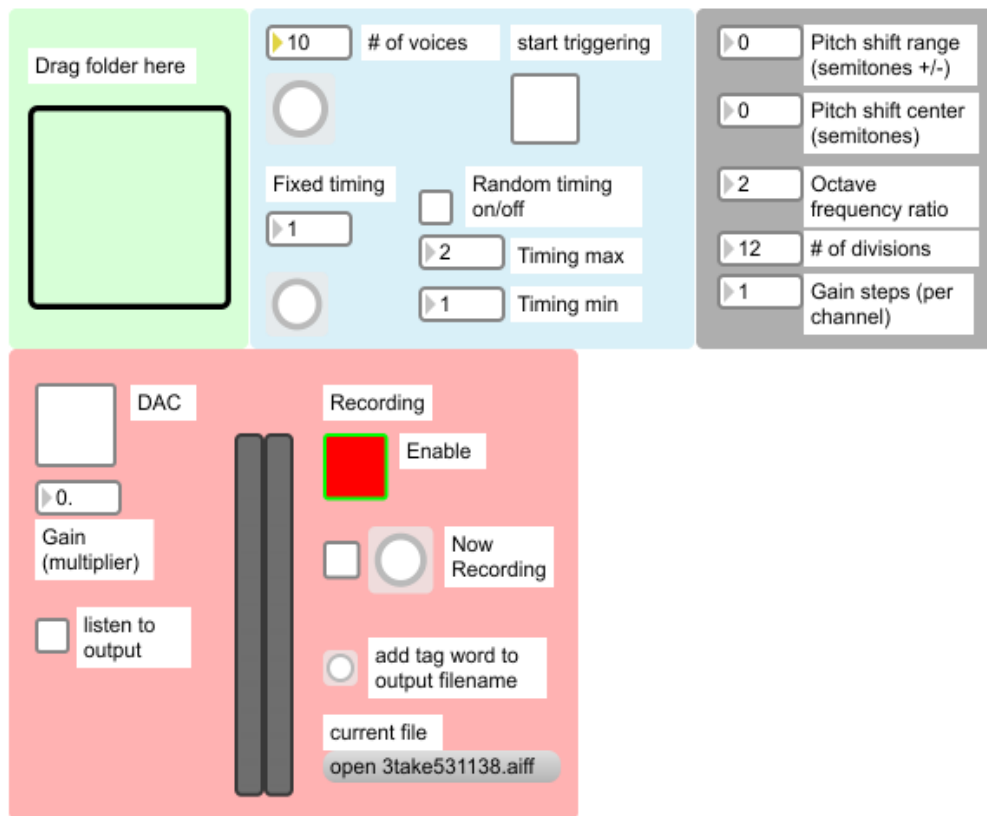


Using the Soundchain patch

Electronic Music I

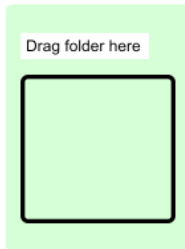
Fall 2013

1. The Soundchain patch was made using the Max MSP programming language.
 - a. This is a commercial software; to build and edit 'patches' (common name of programs designed in this software), one must purchase it from Cycling '74.
 - b. A limited version, called Runtime, is available for free. It is not able to edit patches, only to open and operate them.
 - c. Download this version from Cycling '74's website: <http://cycling74.com/downloads/runtime>
 - d. Once the installer is downloaded and installation is complete, you will be able to open the patch file.
2. Patch interface
 - a. The interface for the patch is pictured below.

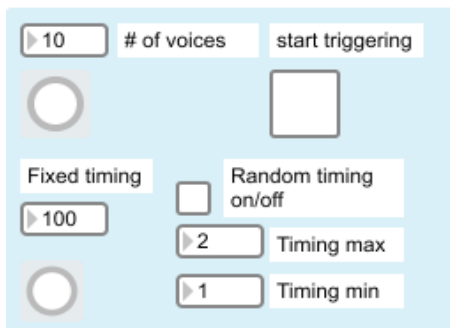


- b. It is organized into sections, grouping related functions together into one block.
3. Basic operation
 - a. This will create a basic soundchain, with minimal alteration done to the sound files.
 - b. First, create a folder with the audio files you wish to use.
 - c. From the Finder or Desktop, drag this folder onto the thick-bordered green square labeled "Drag folder here".
 - d. Click the check box labeled "DAC". **This box must be checked to playback or record files.**
 - e. Click on the red check box labeled "Record Enable". **This box must be checked for an output file to be recorded.**

- f. Click the check box labeled “start triggering”. This will begin playback and recording.
 - g. After the desired duration, click the check box “start triggering” again. Playback will stop, recording will stop, and an audio file of the output will be created in whatever directory the patch is located.
4. Advanced operation
 - a. By adjusting the several values presented in the patch interface, the output of the patch can be controlled more specifically.
 - b. The items below explain in more detail these values.
 5. Folder (pictured below)

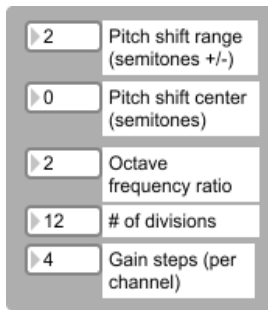


- a. This will read the files contained in a folder, and use the filenames for playback.
 - b. To read a folder, drag the folder from the Finder/Desktop/etc. and drop it inside of the thick-bordered green square.
 - c. To read a new folder, simply repeat this process.
6. Voices/Triggering



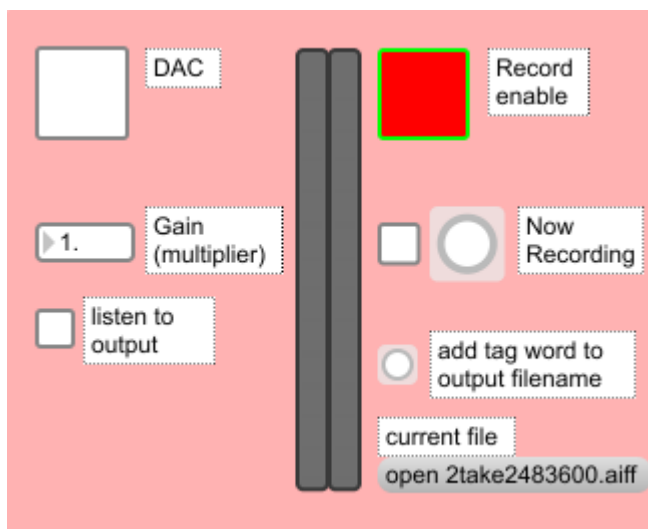
- a. This controls the number of files which can be overlapped, and the rate at which files are played.
- b. To set the maximum number of files which can be overlapped, adjust the value of the number box to the left of “# of voices.” When the desired value is set, click on the button below this number box to set the value.
- c. The triggering of file playback can be done either at a fixed rate, or at a random rate between a specified minimum and maximum. These values are controlled from the respectively labeled number boxes. The rate is expressed in milliseconds.
- d. To turn on or off the randomized triggering rate, click on the check box labeled “Random timing on/off”.
- e. To begin triggering file playback, click on the large check box labeled “start triggering”.
- f. The round button in the lower left hand corner of this block will blink when the triggering is turned on.

7. Playback alterations



- This controls the parameters of each file that is played, specifically the degree of pitch shift and the degree of panning.
- “Pitch shift range (semitones +/-)” controls the possible range of semitones each file will be transposed. This one value represents a range up **and** down; a setting of 5 will result in possible transpositions of -5 semitones to +5 semitones.
- “Pitch shift center (semitones)” establishes a base transposition applied to every file. A setting of 3 will result in each file played back **first** being transposed +3 semitones, and **second** by whatever random value is determined based on the value described in 7b above.
- “Octave frequency ratio” controls the space which the patch's transposition calculation considers to be an 'octave'. The default is 2; so, a semitone is calculated as being the n^{th} root of 2.
- “# of divisions” is the number of divisions calculated in relation to the octave ratio described in 7d. The default is 12; this gives a semitone the value of the 12th root of 2 (this is 12-tone equal temperament).
- “Gain steps (per channel)” controls the range of randomness available for panning. Panning is calculated by the patch as a random value for each channel, between 1 and $1/n$ where n is the value set in this number box. This value alters the amplitude of audio coming over that channel.

8. Playback/recording



- The playback controls in this block are the objects on the left; the recording controls are on the right.
- “DAC” (Digital-Analog Conversion) enables the patch to process audio. This includes playback of soundfiles and recording of the output file. **This box must be checked for these functions to**

operate.

- c. “Gain (multiplier)” multiplies the digital audio values of the patch's playback.
- d. This value is applied both to the recorded output and the output-listening function. This value can be used to set a desirable level.
- e. “listen to output” directs audio to the currently set audio output for the computer. This will not effect the recorded output file of the patch.
- f. The meters give a visual representation of the signal, **after** the gain multiplier described in 8c has been applied.
- g. The meters **will** indicate clipping. They will also function even if “listen to output” is not checked.
- h. “Record enable” is used to control whether or not the patch creates an output audio file.
 - i. When the interior of the box is red, no recording will occur. Recording will automatically be stopped when playback triggering is stopped. Recording can be stopped during playback; it must be enabled again once playback has stopped.
 - ii. During playback, if recording is turned off and then on again, only one file will be created. This file will be a recording of the output up until recording was turned off; turning recording on during playback has no effect.
- i. “Now recording” uses a check box and a blinking button to indicate that recording is in progress. These cannot be manipulated by the user, and have no effect on the patch's workings.
- j. Clicking the button labeled “add tag word to filename” will cause a text input window to appear. The text entered will be inserted into the output audio file's name. **This text cannot contain spaces.**
- k. The gray box labeled “current file” gives the filename that will be applied to the current recording.