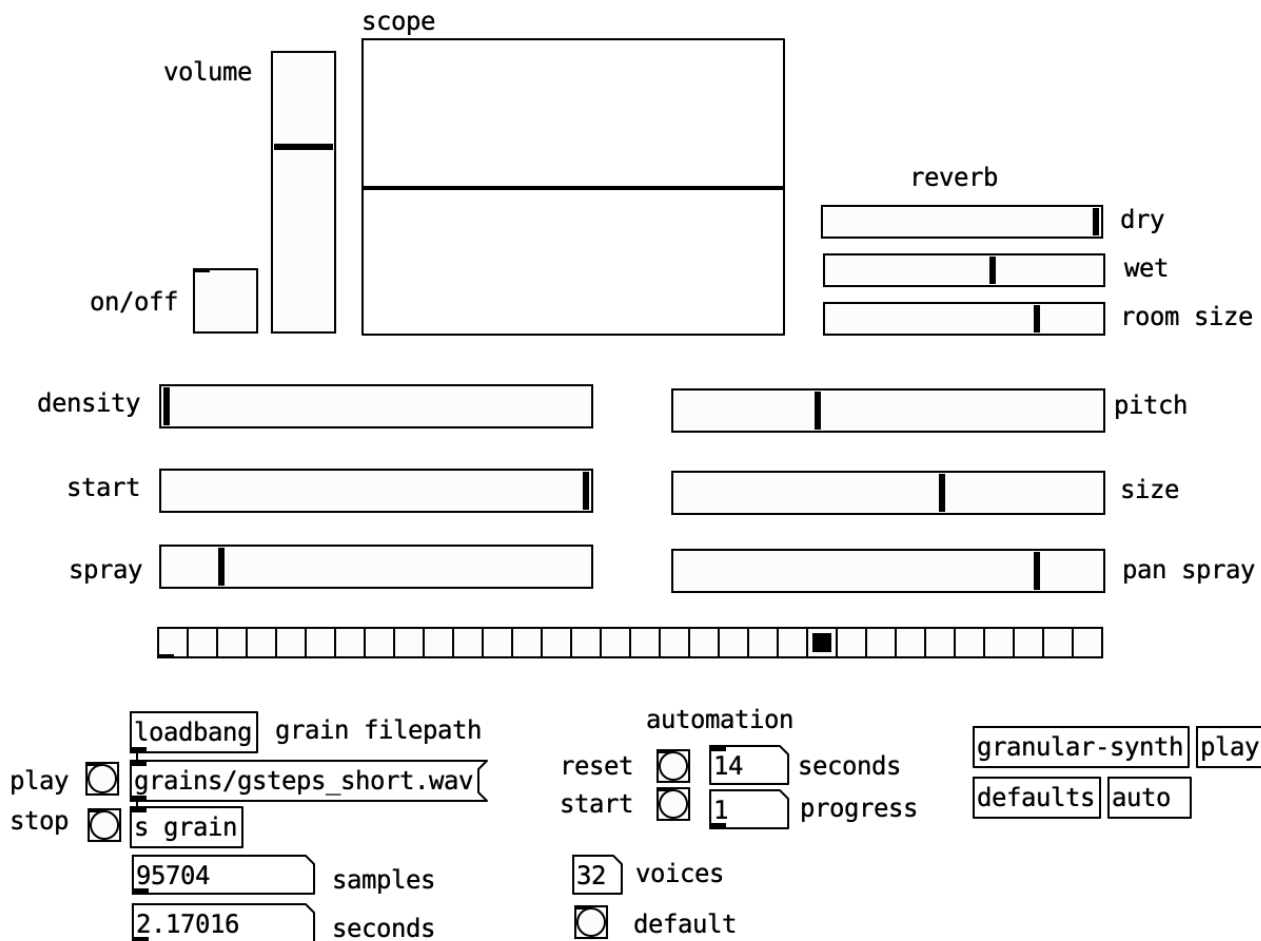# Granular synthesizer

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Usage

The main patch is `granular-synth-ui.pd`.
After opening it you should see something like this.

By default, this will automatically load the filename from the previous usage. We store all our grain files (16/44.1 WAVs) in a folder at the same level called `grains`.

We also use the [freeverb external](#), which you will need to install if you do not already have it.

Controls

To start, it is often nice to preview the loaded sound file. This can be done by pressing the **play** button on the left hand side. This will play the loaded audio file from start to finish. You can stop the playback at anytime by pressing **stop**. You will also see the total number of samples in the file as well as how many seconds long it is.

With your file loaded you can enable the synth by pressing the **on/off** toggle on the top left. This will start playback of the grains. You will see that when a grain is played the radio on the bottom will signal. In total, there are 32 voices, i.e. 32 different granular modules that can playback a grain at the same time (this may consume quite a bit of CPU). This is done to allow for very high densities without artifacts. You can change the number voices at anytime using the number box show in the center bottom.

By default, the **density** will be set very low. You can then use the **size** control to change how large each grain is. The **start** control sets where each grain starts playing from within the file. This can be adjusted by increasing the **spray** control, which will randomly shift the starting point of the grain. The greater the **spray** the large area the starting point is sampled from the file.

On the other-hand, **pan spray** simply changes how each grain is panned in the stereo field on playback. By default this is set to 0 meaning that each grain is played in the center. Increasing it to the maximum will mean that each grain will be played anywhere at random in the stereo field (and this works best with a high density to help reduce comb-filtering).

An interesting feature of the granular synth is that it allows you to change the pitch of the sound without changing its playback speed. The **pitch** control will allow you adjust the pitch in this way within a limit. Due to the current implementation, you should be careful as it is possible to introduce artifacts by stretching the pitch too much.

To make the samples a bit more lush there is as a very simple reverb. There are controls for the **dry** and **wet** signal levels, as well as the **room size** (we recommend big). The reverb has a few more parameters but to keep the main UI clean these aren't show on the front page and can be adjusted in the `granular-synth.pd` patch if desired.

Finally there is a (*very* simple) automation system that will automatically seek through the

Samples

Here are a few different pieces made using this synth without any kind of post-processing. At the start of each sample the original sound is played.

Bikini girls by Sven Libaek

Cubrámonos con Cenizas by Pluhar

Window XP startup

Dialup tones