

Looming App Documentation (0.1 Draft)

LoomingApp
(c) Stefano Fasciani 2017
<http://stefanofasciani.com>
based on FB360-Spatializer

The “Auditory Looming Generator” (AuditoryLoomingGen.maxpat) is an Max/MSP application that generates auditory looms. Currently it supports two (linearly and independent) moving sources and it generates binaural 3D spatial audio. It is based on the FB 360 spatial workstation (<https://facebook360.fb.com/spatial-workstation/> select download SDK).

Requirements

The VST plugins FB360-Spatialiser.vst and FB360-Control.vst installed and included in the MAX search path.

The files fb360ctrl.fxp and fb360st.fxp in the in the same folder of AuditoryLoomingGen.maxpat.

Spatializer

This section includes documentation of the FB360 Spatializer plugin adapted to the LoomingApp. In LoomingApp sources position control is based on Cartesian 3D Coordinates (x, y, z). However Polar coordinates (below) are shown as well.

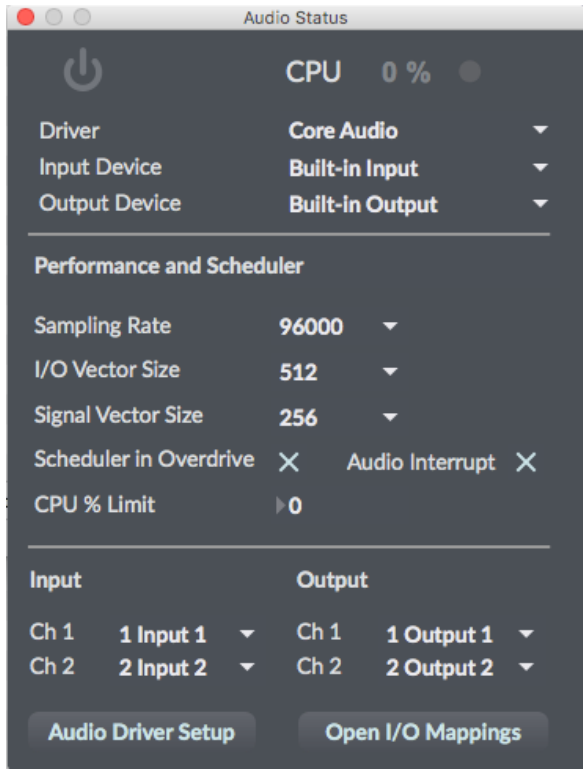
- **Azimuth:** The position of the sound on the horizontal plane. 0 degrees is when the sound source is directly in front of the listener, 90 degrees is hard-right, -90 is hard-left and +/-180 is directly behind
- **Elevation:** The position of the sound on the vertical plane. 0 degrees is when the sound source is directly in front of the listener, 90 degrees is directly above and -90 is below
- **Distance:** The distance of the sound source from the listener in meters. Room modeling and distance attenuation parameters are affected by this value.

Distance must not exceed 60m (keep an eye on the resulting distance value while controlling the Cartesian coordinates). In the source position illustration, the white circle represents the 60m distance range.

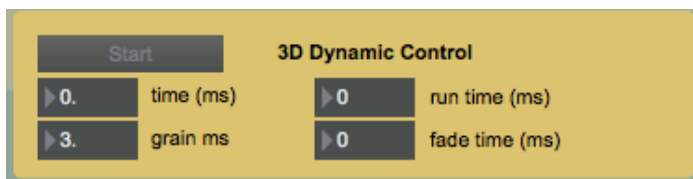
- **Spread:** The width or spread of the sound in space. A value of 0.1 results in the sound being treated as a point source. A value greater than 0.1 would create a diffused sound that is spread out in space.
- **Attenuation:** Enable or disable distance based attenuation of the sound
 - Minimum Distance: The distance value after which the amplitude attenuation starts
 - Maximum Distance: The distance value after which the amplitude attenuation stops
 - Factor: The attenuation curve. A value of 1 is a 6dB drop every time the distance is doubled (this is how most sounds work in the 'real' world). A value greater than 1 results in a steeper rolloff.
- **Doppler:** Toggle Doppler effect. This also enables delayed time of flight, i.e, the sound is delayed based on its distance from the listener. This can greatly improve the localization quality if room modeling is enabled – Doppler Level: Intensity of the Doppler effect.
- **Room:** Enable or disable room modeling. This can greatly enhance the spatialization effect and quality. The room parameters can be controlled through the FB360 Control plugin.

Note: if you are emulating outdoor environment do not use (or minimize) the use of room modeling.

Recommended Max Audio Settings (Options → Audio Status).



Use a grain (3D Dynamic control) between 3 and 5 (for very slow moving sources you can increase it). When the “run time” is significantly larger than “time” you need to increase the value of grain. The smaller the grain the better moving source audio rendering you get.



Note that at the moment once you press start there is no way of stopping the Source Movement (you have to wait until the end). A stop button may be added in future versions.