MapSPAT - User manual

Introduction

- MapSPAT is a MaxForLive device that can be used in Ableton Live (10 and 11 and likely 12) or as a MaxMSP patch. It is based on FluCoMa audio descriptors https://www.flucoma.org and the SpatGRIS spatialization system https://gris.musique.umontreal.ca/.

- To use MapSPAT, you need to install SpatGRIS and audio routing software (such as BlackHole for Mac and Jackrouter for Windows) to route audio from Ableton Live to SpatGRIS. For more information on audio routing and SpatGRIS operation, refer to the SpatGRIS manual available in the software's help window.

- Considering SpatGRIS's workflow, MapSPAT can be used instead of the ControlGRIS plugin.

- We recommend using the latest version of MaxMSP rather than the bundled version in Ableton Live.

How to start using MapSPAT

1. Place the MapSPAT device on the Ableton Live audio track you intend to spatialize.

2. Set the numeric value of the source in MapSPAT to match the audio track in Ableton Live.

3. MapSPAT is now ready to analyze the incoming audio.

4. Activate the mappings in the matrix to send the spatialization OSC signals to SpatGRIS.

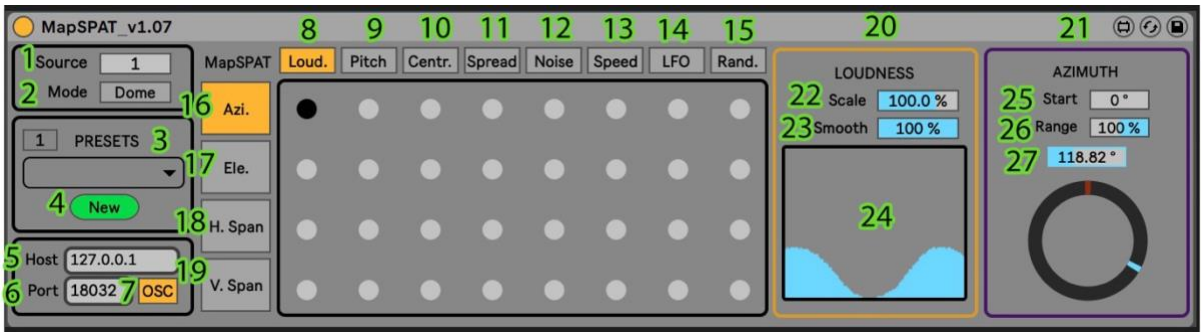
5. An audio descriptor can be mapped to multiple spatial parameters simultaneously. The same applies to the LFO and Random functions.

6. A spatial parameter can be mapped to only one audio descriptor or function (LFO or Random) at a time.

A demonstration Ableton Live project is available with the installer to explore the device's functions.

Interface elements and functions, starting from the top left.

Numbers in green indicate functions explained in the guide.



- **Source (1)** determines the OSC channel on which MapSPAT sends spatialization data.
- **Mode (2)** sets the spatialization mode of MapSPAT. If you use DOME (or CUBE) mode on SpatGRIS, select the same mode in MapSPAT.
- **Presets (3).** You can create presets that save information regarding:
    - the matrix assignments,
    - the options for audio descriptors and Random and LFO functions,
    - the options for spatial parameters.

The **New (4)** button allows you to create new presets. The **Store** button allows you to save or overwrite existing ones. If a preset is modified, the **Store** button turns red. You can recall presets from the drop-down menu.

- **Host (5)** defines the address where the OSC data are sent. The default value is 127.0.0.1, corresponding to the internal device address (i.e., your computer). This value can be changed.
- **Port (6)** is the OSC port number for communication between MapSPAT and SpatGRIS. The two must be set to the same value to communicate. 18032 is the default value.
- **OSC (7)** activates the OSC communication between MapSPAT and SpatGRIS.

Audio Descriptors

To display the window of the desired audio descriptor **(20)**, select it from the list above the matrix.

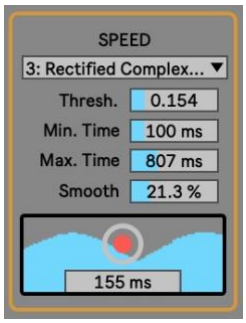
Common functions for audio descriptors

- **Scale (22)** modifies the input data by multiplying it by a fixed value. Scale values below 100% reduce the data value, resulting in smaller variations, while values above 100% increase the data value, resulting in larger variations.
- **Smooth (23)** decreases the irregularity and zigzagging nature of the data's temporal evolution, making it smoother.
- **Graphical representation (24)** shows the temporal evolution of the data**.**

Individual audio descriptors

- **Loud**. **(8)** refers to FluCoMa audio descriptor *Loudness* (https://learn.flucoma.org/reference/loudness/) concerning loudness perception.
- **Pitch (9)** refers to the FluCoMa audio descriptor Pitch (https://learn.flucoma.org/reference/pitch/) regarding pitch perception. In MapSPAT, you can set a minimum and maximum frequency value to establish the analysis range.
- **Centr. (10)** refers to FluCoMa audio descriptor *SpectralShape* (https://learn.flucoma.org/reference/spectralshape/), particularly *Spectral Centroid*. It concerns the frequency value that is the center of gravity in the spectrum. In MapSPAT, you can set a minimum and maximum frequency value to establish the analysis range.
- **Spread (11)** refers to FluCoMa audio descriptor *SpectralShape* (https://learn.flucoma.org/reference/spectralshape/), particularly *Spectral Spread*. It concerns the width of the spectrum.
- **Noise (12)** refers to FluCoMa audio descriptor *SpectralShape* (https://learn.flucoma.org/reference/spectralshape/), particularly SpectralFlatness. This analysis can indicate whether a sound is closer to noise (characterized by a flat spectrum occupying the entire frequency range) or a sine wave (characterized by a non-flat spectrum).

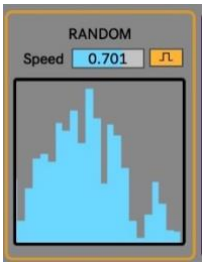
- **Speed (13)** refers to FluCoMa audio descriptor *OnsetSlice* (https://learn.flucoma.org/reference/onsetslice/). This analysis indicates the speed of transient iterations in a sound, which is useful for detecting changes in the speed of rhythmic elements. The first menu lets you choose different metrics depending on the sound material type. **Threshold** refers to the intensity threshold the sound must exceed for analysis. **Min. Time** and **Max Time** define the minimum and maximum time for detecting repetition speed.



Other functions

LFO (14) is a LFO function that can be applied to spatial parameters to create trajectories. **Speed** defines the speed of the trajectory.

Rand. (15) is a function that generates random values to create random trajectories. **Speed** defines the speed at which the values are generated, allowing the speed of the trajectories to vary. The button next to Speed determines whether the transition between random values is done continuously (gray) or discontinuously (orange).



Spatial Parameters

The spatial parameters correspond to those controlled in ControlGRIS (the SpatGRIS control plugin) for DOME and CUBE mode. For more details, refer to the SpatGRIS manual.

To display the window of the desired spatial parameter **(21)**, select it from the list to the left of the matrix.

Common Functions for Spatial Parameters

- **Start (25)** determines the starting point of the trajectory or Span.
- **Range (26)** determines the extent of the trajectory or Span variation. Positive or negative values of Range determine the direction of the trajectory or Span variation.
- **Real value (27)** shows the spatial parameter value sent to SpatGRIS after the influence of descriptor analysis. It cannot be modified.
- To modify the spatial parameters, it is necessary to change the numerical values next to the Start and Range parameters. It is not possible to vary the spatial parameters through their graphical representation.

Mode DOME

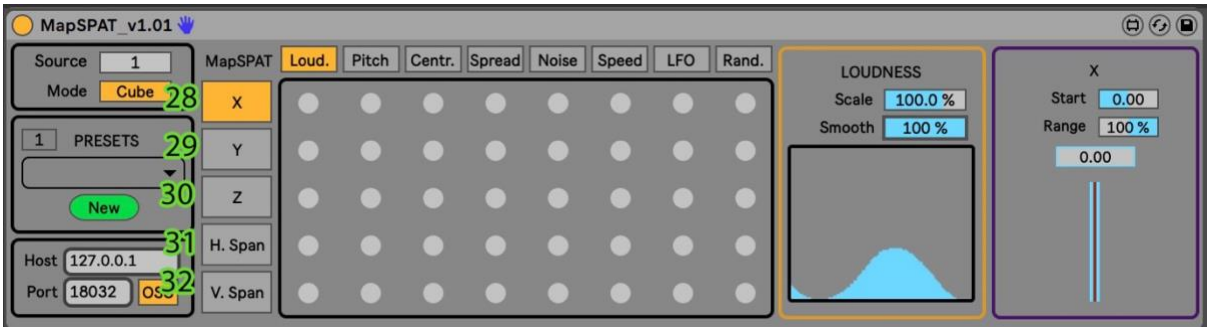
- **Azi. (16)** concerns the source's position on the Azimuth. Positive values of Range determine a clockwise trajectory, while negative values determine a counterclockwise trajectory.

- **Ele. (17)** concerns the source's position on the Elevation**.** Positive values of Range determine a trajectory that starts from bottom to top, while negative values of Range determine a trajectory that starts from top to bottom. In this last case, Start should be more than 0.

- **H. Span (18)** concerns the horizontal (Azimuth) Span.

- **V. Span (19)** concerns the vertical (Elevation) Span.

Mode CUBE



- **X (28)** concerns the source's position on the X axis.

- **Y (29)** concerns the source's position on the Y axis.

- **Z (30)** concerns the source's position on the Z axis.

- **H. Span (31)** concerns the Span on the horizontal axis (X and Y together).

- **V. Span (32)** concerns the Span on the vertical Z axis.