

Overview

Drummatrix is a 16-voice drum sequencer Max for Live device with linear and nonlinear sequencing modes. Each voice is available on 2 separate mixes: `mix1` and `mix2`, which are controlled by 2 separate sequences: `sequence1` and `sequence2`.

Each of the 16 drum voices can play a one-shot sample (.wav or .aif) or real-time input with an ADSR envelope. In nonlinear playback mode, you can move through the sequence data at audio rates, making it possible to create drum sequences with LFOs and other audio.

The user can click individual cells in the Matrix panel to create patterns, or randomize cells with various buttons and key commands. Patterns can be stored, modulated, rotated, mutated between, and more via the `jam` controls.

The matrix data is 3-dimensional, with five possible states (z-values) for each cell: `z0` (off), `z1`, `z2`, `z3`, and `z4`. Each of those values corresponds to a configurable playback speed on the assigned one-shot sample, or an equivalent pitch-bend on the real-time input.

Each voice's `mute`, `solo`, `mix`, `pitch`, `prob`, `1/n`, and `realtime` multislidiers can drift around via a Markov chain process. You can control how much to modulate each voice, and how frequently to regenerate states.

For a more detailed walkthrough, please see this [documentation video](#).

Getting started

When you download this directory, there are five files:

```
1. Drummatrix.amxd           // full 16-voice version
2. Drummatrix-8.amxd         // 8-voice version using less CPU
3. Drummatrix-4.amxd         // 4-voice version using least CPU
4. drummatrix_settings.json  // settings file
5. Drummatrix_manual.pdf     // this document
```

Note that the `drummatrix_settings.json` is empty, containing only: `{}`.

1. Add the entire Drummatrix directory to the File Preferences in Max. **NOTE:** this is especially critical if you own Max for Live but haven't opened the Max application running in the background before. To open Max, simply edit any Max for Live device. Then, go to Options -> File Preferences -> and add this directory, including all subfolders.
2. Similar to 1., add any directories where your audio samples exist to the File Preferences in Max.
3. In Live, add an instance of `Drummatrix-4.amxd`, `Drummatrix-8.amxd`, or `Drummatrix.amxd` to a track. Next, click one of its `lib` buttons to set the library of .wav / .aif files for that grouping of 4 rows. **NOTE:** you must actually click the "Open" button to actually load the directory. If you now re-examine the contents of `drummatrix_settings.json` after selecting a directory, you should see that the folder you selected is now one of the entries. You can change these directories whenever you want, and they are preserved when you close and re-open the Drummatrix.
4. Click the big green button to generate a sequence. Start the Live transport. You should hear the Drummatrix play a looping sequence of randomly selected audio files from the directories assigned in step 3.

Controls

Upper Left panel (global controls):

`position`: if nonlinear mode is on, controls the position of `sequence1` / `sequence2` for `mix1` / `mix2`.

`mix1/mix2` (toggle buttons): Controls whether nonlinear mode is engaged for `sequence1` / `sequence2`. If so, the corresponding slider will control the `sequence1` / `sequence2` position.

`pitch`: modulates pitch +/- 8 octaves for the entire `mix1` or `mix2`.

`snap`: quantizes the list of possible cell speeds in the `pitch` multislider to chromatic ratios.

new samples : get a random set of new .wav / .aif files, for all 16/8/4 drum voices, from the 4 configured directories.

cols : sets the number of columns in the matrix.

tempo : sets the speed of the linear step sequencer. Each rate is a division of the Live transport BPM.

fill% : controls how many ON cells should generate when you randomize a row, column, or the entire matrix.

z : controls the z-axis depth of cells that are randomly generated.

prob : controls the rate at which each voice's playback probability recalculates. If faster than the tempo, a cell could play more than once per step.

1/n : if 1/n node is ON for **sequence1** or **sequence2**, it will only play every n non-zero cells.

Lower left panel (jam controls):

The jam controls allow you to store patterns and modulate sequence patterns.

Storing patterns

To store a pattern, select a number 1-9 to store it and click the **set** button. Patterns must be added sequentially; i.e., you cannot set a pattern 2 before you've set a pattern 1.

NOTE: currently, set patterns CANNOT be saved into Live presets. They exist only for the duration of this Drummatrix.amxd effect device.

Jamming patterns

There are five jam modes, each with its own jamming algorithm: **this**, **toward**, **shape**, **get**, or **walk**.

this : change the matrix pattern a little bit. You can control whether the pattern should grow or shrink, generally, with the yellow and blue multislider.

toward : move a bit closer towards a saved pattern, from whatever the matrix data is now.

shape : create a shape somewhat similar to a saved pattern.

get : retrieve a saved pattern exactly.

walk : move some of the cells in the pattern around, otherwise preserving the structure.

You can either click each mode's button to run that algorithm, or you can automatically rerun jamming via the **Jam** toggle. When engaged, jamming will rerun at the end of each loop. The multislider underneath the buttons allows you to set the relative probability of each jam process, so that at the end of each bar it will decide exactly one algorithm to run. So, for example, you could set the multislider so that 80% of the time, it will run **this**, while 20% of the time, it will move **toward** a new pattern. You can select how many bars between each jam with the **every** number.

The **Fill** toggle engages fill mode, where a random number of channels are soloed every n bars. You can select how many bars between each fill with the **every** number.

Matrix panel

Each of the 16/8/4 voices has its own row, starting on the left at the **samples** multislider, and ending at the **realtime** multislider on the right.

These controls allow you to mix, mute, solo, sequence, clear, randomize, pitch-bend, and control the playback probability of each voice.

The big red button clears the matrix; the big green button randomizes it. The green and red rows on the bottom and right of the matrix are for randomizing and clearing columns and rows, respectively.

sample : picks a sample in a directory. All files are sorted by name, so the left side picks the first filename, and the right side picks the last.

lib : select a library of .wav / .aif files for these 4 rows.

z1 / z2 / z3 / z4 : controls the playback speed for cells at that depth.

jam : controls how much to jam that row, from no jamming to full intensity.

mute : mutes the row. The left **mute** is for **mix1**; the right **mute** is for **mix2**.

solo : solos the row or adds it to any other soloed rows. The left **solo** is for **mix1**; the right **solo** is for **mix2**.

mix1 : mixes all 16/8/4 drums for **sequence1**.

mix2 : mixes all 16/8/4 drums for **sequence2**.

pitch : controls pitch +/- 8 octaves for both **sequence1** / **sequence2**.

prob1 : controls playback probability for **sequence1**.

prob2 : controls playback probability for **sequence2**.

1/n : If 1/n mode is on, controls how many times to skip before playing a cell in the row. Defaults to playing every cell by default, i.e. 1/1.

realtime : If realtime mode is on, plays the audio input from the Live track where the Drummatrix is running, instead of the one-shot sample assigned to the row.

ADSR : creates an ADSR amplitude envelope for any rows where realtime mode is on. Every time an ON cell is reached, a new envelope will be generated for the row.

Output panel

wet : dry/wet control for the effect. Defaults to 100% wet.

gain : wet gain applied to the Drummatrix output, to be blended with the dry signal.

out : main volume control.

Multislider drifting UI

Underneath each of the multisliders in the Matrix panel is a yellow and grey UI which can periodically update that multislider via a drifting process, similar to a Markov chain.

Each of the multisliders (e.g. **mix1**, **prob2**, **pitch**) has a corresponding **mod** multislider. The **mod** values control how much that particular value can change each time the drifting process reruns.

on/off : Turn on the drifting process by clicking the toggle for **mix1**, **mix2**, etc. You can change the rerun speed to either notevalues or ms.

set : when clicked, stores the multislider's current shape and uses that as a base pattern from which all future states will be based.

lo/hi : controls the range of the multislider.

intensity : controls the maximum amount of change in each state change.

jam mod every : defaults to off. When set to on, the **mod** values themselves will get jammed a bit, every **n** bars. The dial controls intensity.

Key combinations

d1, d2 . . . d9 = set pattern 1,2...9

dj = toggle jam mode on/off

dr = randomize all cells

`dm` = clear all cells

`d<` = rotate sequence left

`d>` = rotate sequence right

`d+up-arrow` = rotate sequence up

`d+down-arrow` = rotate sequence down

Additional Notes

Currently, you can only run one Drummatrix instance at a time in Live. It is somewhat CPU intensive as-is, so running two would probably not be advisable anyways!

I am grateful to IG: @szalwia, Ricardo Guzman aka Cochorno, and Philippe Loiseau for Trajectoire, who tested this device and made suggestions to help improve it prior to release.