MIDI Drum Sequencer (MDS) v0.2

Quick Start Guide

1. Introduction

The MIDI Drum Sequencer (MDS) is designed to emulate hardware drum machines, allowing you to create and edit drum sequences (patterns) and combine them into entire songs. Patterns can be up to 32 steps long (longer patterns can be created by running two or more patterns in sequence). Patterns can be combined to run sequentially and/or in parallel, with virtually no limitation on the number of patterns involved or the complexity of their organization. Up to 8 instruments can be selected for each pattern, but if you need more than 8, you can have two patterns run concurrently (in parallel).

2. Installation Requirements

MDS was initially developed and tested under Pure Data v0.51.2 (64-bit) and Windows 7 SP 1 (64-bit). There's a good chance it will work on Linux and MacOS too, although it hasn't been tested.

Although it will probably run under earlier versions of Pure Data, there's no guarantee, and you may encounter problems if you're running a much older version of Pure Data or any of the required external libraries.

The following libraries, all of which can be installed using Deken (under the Help menu, click on "Find externals"), are required:

- tof
- cyclone
- ggee
- zexy
- iemlib
- easyflow

3. Editing Songs

When you start up MDS (either by double-clicking on the file "Drum-Sequence.pd" or starting Pure Data and opening the file), the following window will open.
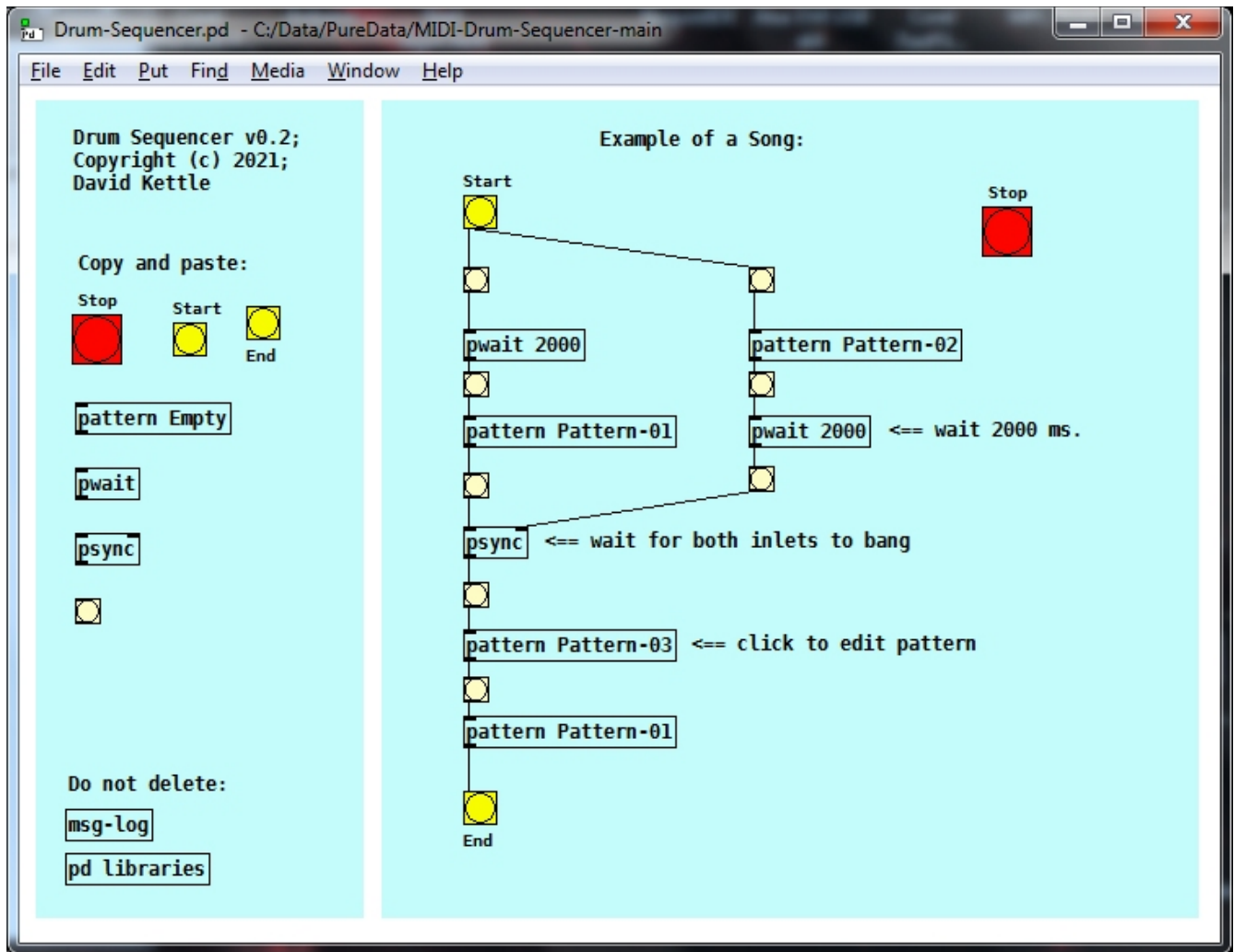
It's assumed that you have some familiarity with editing patches in Pure Data, although you don't need extensive knowledge. Patterns can be added or removed to your song by creating [pattern] objects, optionally specifying the file name as the first (and only) creation argument. For example, in the screen print above, there are 4 patterns: Pattern-01, Pattern-02, Pattern-03 and Pattern-01 (the same pattern can be used in more than one place).

The initial starting point of the song is indicated with a [song-start] object (which takes no creation arguments), and the end of the song is indicated with a [song-end] object

(which likewise takes no arguments). Patterns are connected by drawing lines from the outlet of one pattern to the inlet of another. You may wish to place a [bang] between them to monitor the progress of your song, although this isn't required. This will also allow you to start a song at some intermediate point, instead of the beginning point.

If you don't want a pattern to start immediately after the preceding pattern finishes, you can add a [pwait] object between them, specifying the wait time in milliseconds as the creation argument. For example, in the sample song above, Pattern-02 is followed by a wait or pause of 2000 ms (2 seconds).

If you have two patterns running in parallel, you can force them to synchronize by adding a [psync] object and connecting the outlets of both patterns to the two inlets of [psync]. For example, in the sample song above, Pattern-01 and Pattern-02 (followed by a wait of 2 sec.) are synchronized. In other words, the song will not continue until the [psync] object has received a [bang] on both inlets.

If you need to synchronize more than 2 patterns, unfortunately you have to use 2 or more [psync] objects, connected in a "ladder" formation, because [psync] has only 2 inlets.

To play the song, click on the yellow "Start" button. To stop the song before it has finished, click on the red "Stop" button.

4. Editing Patterns

Patterns are created or modified in the [pattern] window:
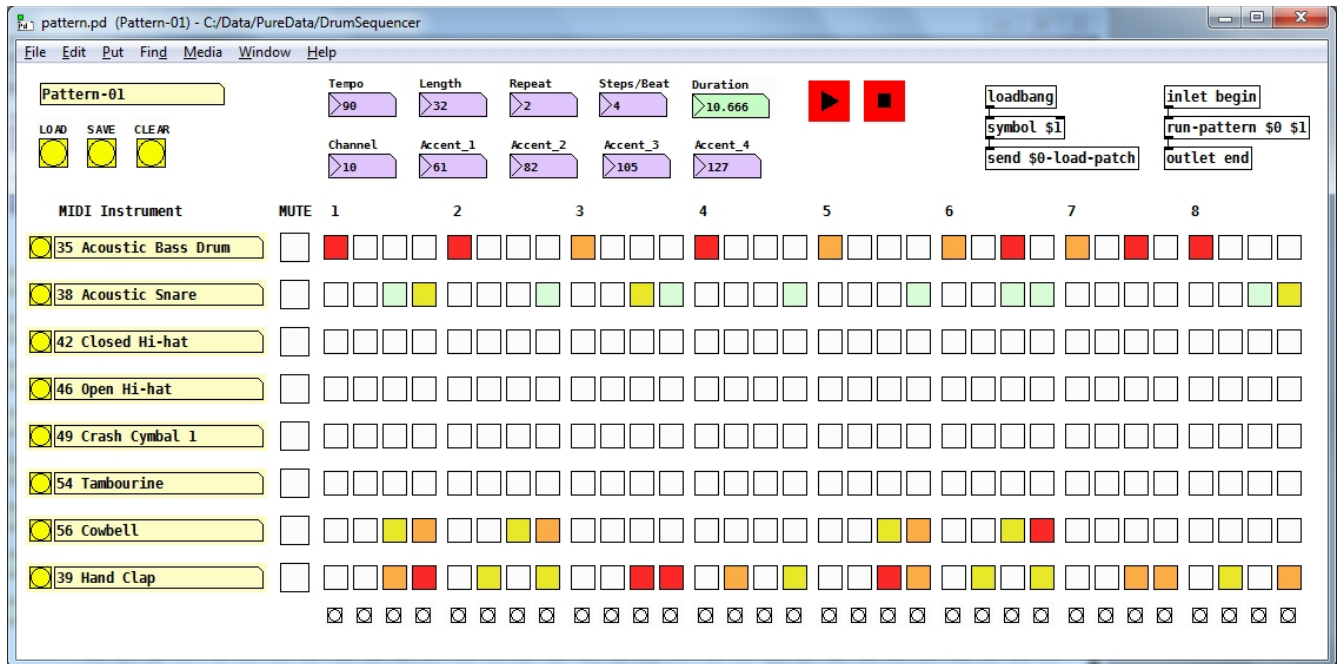
Although you can add or remove Pd objects in this window, it's recommended that you don't, unless you're fairly knowledgeable about editing Pure Data patches. You should be able to create, save, load and modify patterns without modifying the Pure Data code in this window.

To load a pattern, save a pattern (possibly under a different name) or clear the pattern, use the three buttons in the top left corner, labeled "LOAD", "SAVE" and "CLEAR". The file name of the currently-loaded pattern is display above these three buttons.

To the right of these buttons, there are number boxes in which you can enter the tempo (in BPM), the length of the pattern (the number of steps in the pattern, from 1 to 32), the number of times to repeat the pattern (from 1 up to some very large number), the number of steps per beat (from 1 to 32), the MIDI channel to send the output on (which defaults to 10, but can be from 1 to 16), and the four accent levels (this will be explained below). The total duration of the pattern, in seconds, will be automatically calculated and displayed in the green box labeled "Duration".

Note that the actual MIDI device to send the output to is specified under "Media / MIDI Settings..." in the Pure Data menu bar. Your MIDI device must be connected before starting Pure Data (if it's a hardware drum machine) or already running (if it's a soft synth running on your computer).

The percussion instruments you want to use are selected by clicking on the yellow buttons on the left side of the window (see below). Each pattern can use up to 8 instruments, and these can be different for each pattern. So although there's a limit of 8 instruments for each pattern, if you want to use more that 8, you can create two or more patterns that run in parallel.
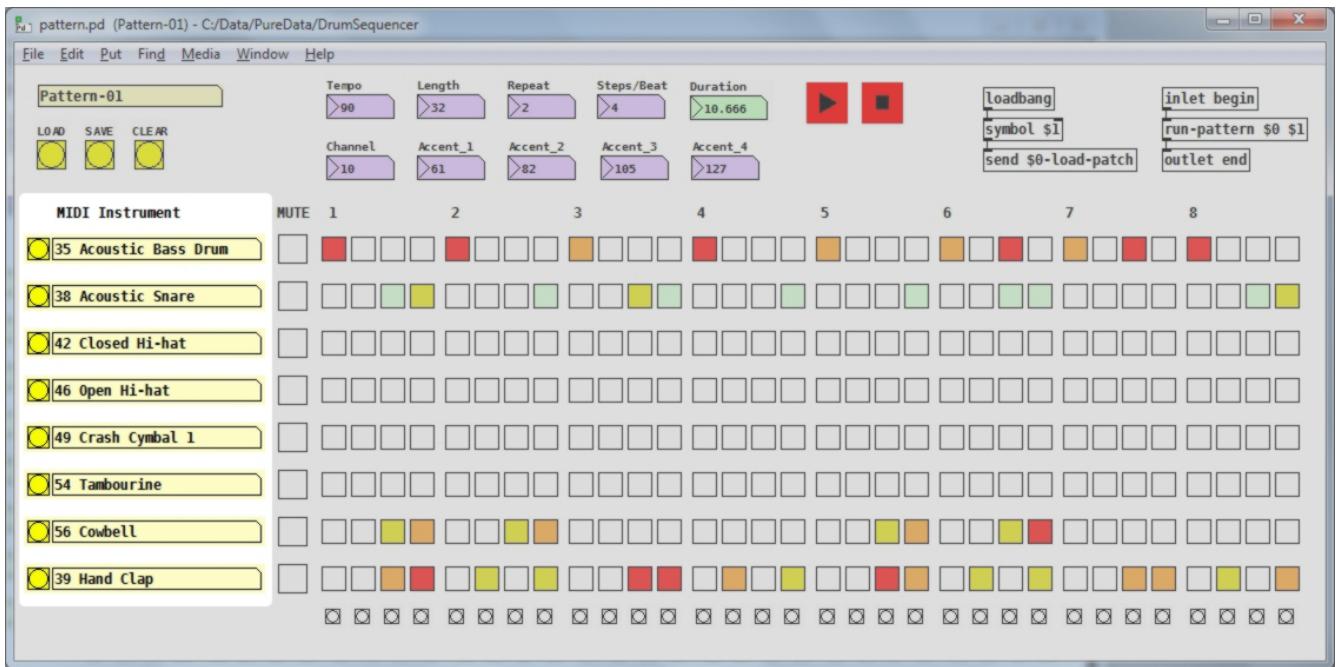
When you click on one of the yellow buttons, a drop-down list of standard MIDI percussion instruments will be displayed, from which you can select the instrument you wish to use. The list of instruments (based on the General MIDI standard) can be found in the file "Percussion.txt" in the sub-folder "data". You can edit this file if you want to translate the names to another language, or just use names of your own choosing, but be careful to keep the file in the same format, with one instrument per line, preceded by the MIDI note number for that instrument. The spaces should all be "non-breaking" spaces (hex 'A0'). If the drum machine or soft synth you're using has additional percussion instruments, you can add them to this file. Here is the file if you ever need to recover the original contents:

|	
87 Open Surdo	79 Open Cuica
86 Mute Surdo	78 Mute Cuica
85 Castanets	77 Low Woodblock
84 Belltree	76 High Woodblock
83 Jingle Bell	75 Claves
82 Shaker	74 Long Guiro
81 Open Triangle	73 Short Guiro
80 Mute Triangle	72 Long Whistle

71 Short Whistle

70 Maracas

69 Cabasa

68 Low Agogô

67 High Agogô

66 Low Timbale

65 High Timbale

64 Low Conga

63 Open High Conga

62 Mute High Conga

61 Low Bongo

60 High Bongo

59 Ride Cymbal 2

58 Vibra Slap

57 Crash Cymbal 2

56 Cowbell

55 Splash Cymbal

54 Tambourine

53 Ride Bell

52 Chinese Cymbal

51 Ride Cymbal 1

50 High Tom

49 Crash Cymbal 1

48 Hi-Mid Tom

47 Low-Mid Tom

46 Open Hi-hat

45 Low Tom

44 Pedal Hi-hat

43 High Floor Tom

42 Closed Hi-hat

41 Low Floor Tom

40 Electric Snare

39 Hand Clap

38 Acoustic Snare

37 Side Stick

36 Electric Bass Drum

35 Acoustic Bass Drum

34 Metronome Bell

33 Metronome Click

32 Square Click

31 Sticks

30 Scratch Pull

29 Scratch Push

28 Slap

27 High Q

00 Unassigned

Note that the MIDI note numbers should be in descending order if you want them to display in ascending order in the menu (they're loaded in reverse order).

Each instrument can be selectively muted by clicking on the box in the column labeled "MUTE". The box will be changed to red if the instrument is currently muted; otherwise, it will be empty (white).
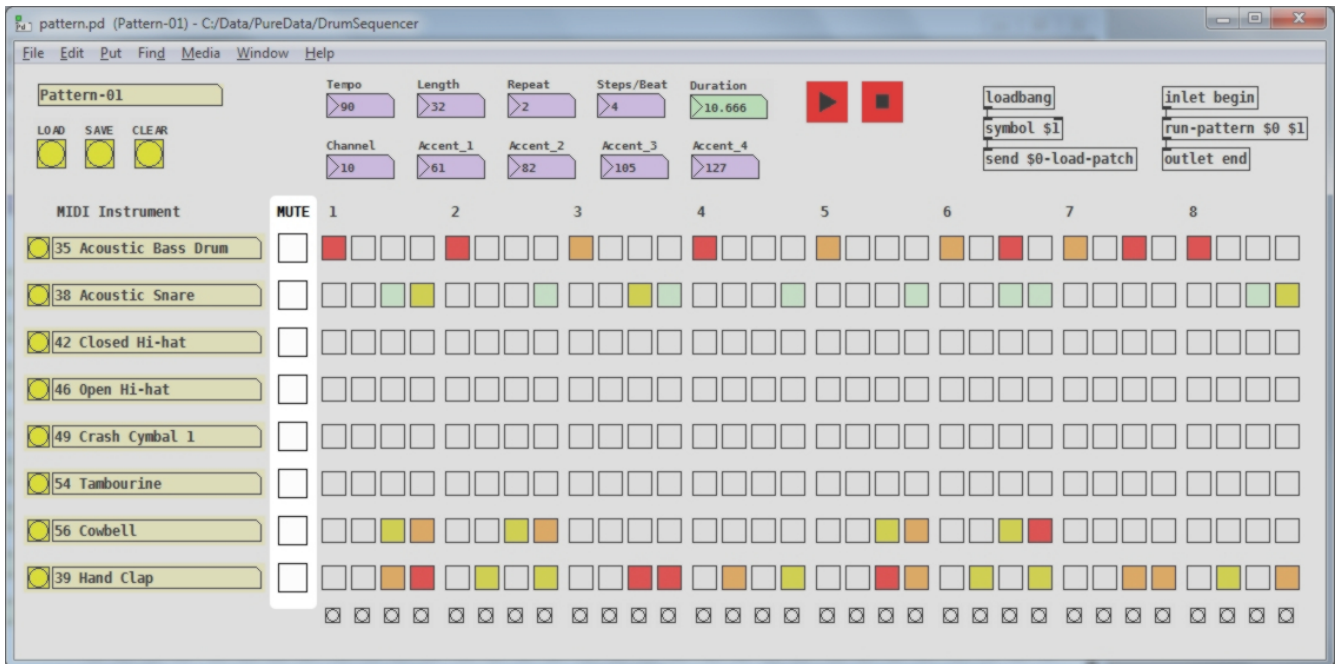
Finally (and most importantly), the patterns for each instrument are entered using the grid of squares to the right:
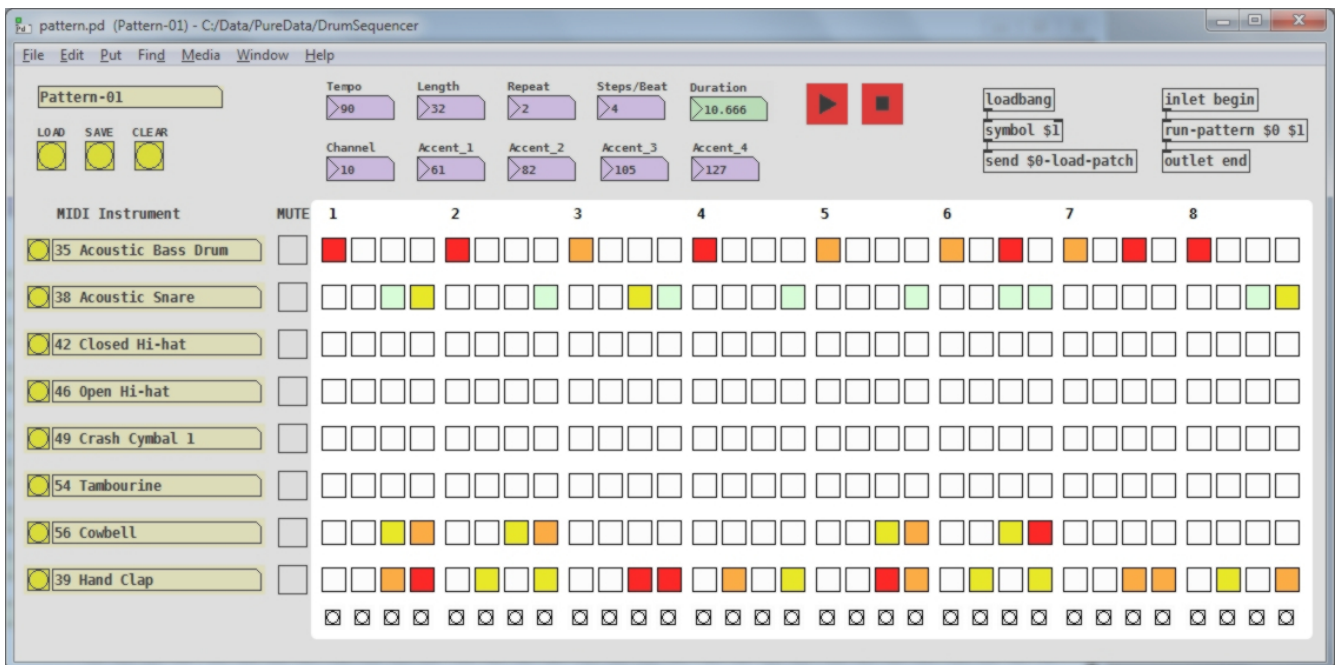
The amount of accent to apply to each hit can be set to one of four levels. To specify the four levels (in terms of MIDI note velocity), use the four boxes at the top of the window, mentioned previously, labeled "Accent 1", "Accent 2", "Accent 3" and "Accent 4". They can be set to any value between 1 and 127 (the range of values used by MIDI to indicate "velocity"). They would normally increase in value, from left to right, but you can set them to any values you wish, within the range of 1 to 127.

The first time you click on one of the steps in the pattern, it will be set to level 1 and the colour will change to light green. If you click on it a second time, it will be set to level 2 and the colour will change to yellow. If you click on it a third time, it will be set to level 3 and the colour will change to orange. And if you click on it a fourth time, it will be set to level 4 and the colour will change to red. Finally, if you click on it a fifth time, it will be turned off and the colour will change back to white.

 To run or stop the pattern, use the two red transport buttons at the top of the window (see below). As the pattern runs, the small "LED's" at the bottom of the window will flash on and off.
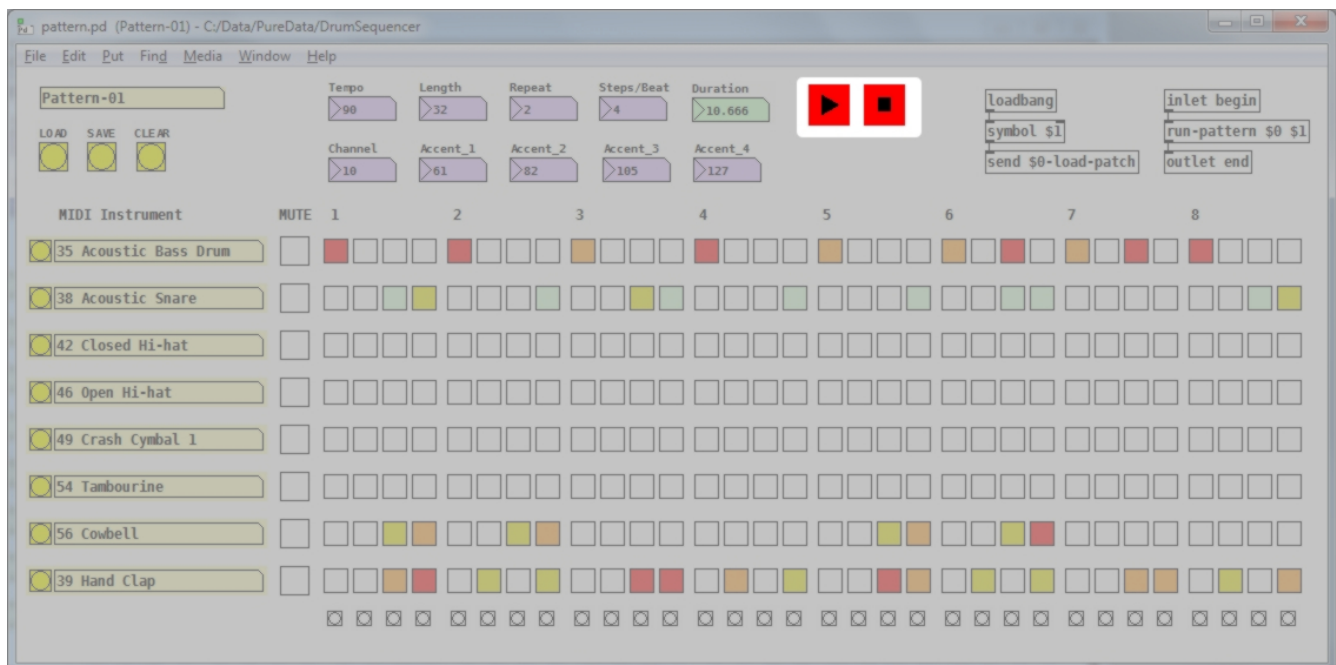
5. Getting Support

If you run into problems or have questions, please visit the project repository on Github:
https://github.com/dfkettle/MIDI-Drum-Sequencer