



Coding Live Music with Sonic Pi

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Before we begin, download and install
Sonic Pi by visiting www.sonic-pi.net



What's the plan?

- What is Sonic Pi?
- Hot Cross Buns
- Let's Explore
- Other Platforms, Resources, and Communities
- Let's Talk

How to reach the resources

- www.JaredOLeary.com
 - Presentations
 - Coding Live Music with Sonic Pi



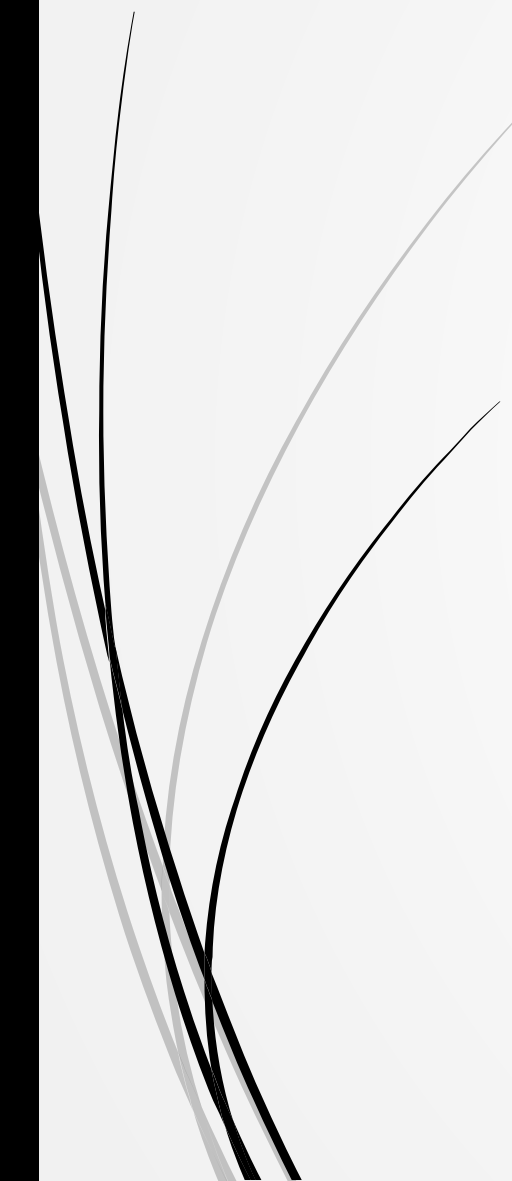


What is Sonic Pi?

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What is Sonic Pi?

- Composing
 - Performing
 - Improvising
 - Aleatoric
- 



Hot Cross Buns

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Setting our tempo

1. `use_bpm 144`



Adding our notes

1. `use_bpm 144`
- 2.
3. `play :e`
4. `play :d`
5. `play :c`



Separating our notes

1. use_bpm 144
- 2.
3. play :e
4. sleep 2
5. play :d
6. sleep 2
7. play :c
8. sleep 4



Defining a function

1. use_bpm 144
- 2.
3. define :buns do
4. play :e
5. sleep 2
6. play :d
7. sleep 2
8. play :c
9. sleep 4
10. end



Congratulations,
you recreated Cage's 4' 33"!



Calling our function

3. define :buns do

4. play :e

5. sleep 2

6. play :d

7. sleep 2

8. play :c

9. sleep 4

10. end

11.

12. buns()

13. buns()



Starting our next phrase

12. buns()

13. buns()

14.

15. play :c

16. sleep 1



Using repeats

12. buns()

13. buns()

14. 4.times do

15. play :c

16. sleep 1

17. end



Using repeats

```
12. buns()  
13. buns()  
14. 4.times do  
15.   play :c  
16.   sleep 1  
17. end  
18. 4.times do  
19.   play :d  
20.   sleep 1  
21. end
```




Completing our song

```
12. buns()  
13. buns()  
14. 4.times do  
15.   play :c  
16.   sleep 1  
17. end  
18. 4.times do  
19.   play :d  
20.   sleep 1  
21. end  
22. buns()
```



Changing our synth

1. use_bpm 144
2. use_synth :tri
- 3.
4. define :buns do
5. play :e
6. sleep 2
7. play :d
8. sleep 2
9. play :c
10. sleep 4
11. end



Shaping our notes

1. use_bpm 144
2. use_synth :tri
- 3.
4. define :buns do
5. play :e, release: 2
6. sleep 2
7. play :d, release: 2
8. sleep 2
9. play :c, release: 4
10. sleep 4
11. end



Adding effects

13.

14. `with_fx :echo do`

15. `buns()`

16. `buns()`

.....

24. `buns()`

25. `end`



In a different buffer

1. `use_bpm 144`



Creating our loop

1. use_bpm 144
- 2.
3. live_loop :perc do
4. end



Metal

1. use_bpm 144
- 2.
3. live_loop :perc do
4. sample :bd_haus
5. sleep 0.25
6. end



EDM

1. use_bpm 144
- 2.
3. live_loop :perc do
4. sample :bd_haus if (spread 1, 4).tick
5. sleep 0.25
6. end



Adding in another rhythm

1. `use_bpm 144`
- 2.
3. `live_loop :perc do`
4. `sample :bd_haus if (spread 1, 4).tick`
5. `sample :elec_bong if (spread 3, 8).look`
6. `sleep 0.25`
7. `end`



...and another

1. use_bpm 144
- 2.
3. live_loop :perc do
4. sample :bd_haus if (spread 1, 4).tick
5. sample :elec_bong if (spread 3, 8).look
6. sample :perc_snap if (spread 9, 12).look
7. sleep 0.25
8. end

Adjusting our amplitude

1. `use_bpm 144`
- 2.
3. `live_loop :perc do`
4. `sample :bd_haus if (spread 1, 4).tick`
5. `sample :elec_bong if (spread 3, 8).look`
6. `sample :perc_snap, amp: 0.3 if (spread 9, 12).look`
7. `sleep 0.25`
8. `end`



Back in our original buffer

12.

13. **define :song do**

14. with_fx :echo do

15. buns()

16. buns()

.....

25. buns()

26. end

27. **end**



Press Run for Cage's encore

(there is a purpose for this)



Hip cross buns

1. use_bpm 144
- 2.
3. live_loop :perc do
4. sample :bd_haus if (spread 1, 4).tick
5. sample :elec_bong if (spread 3, 8).look
6. sample :perc_snap, amp: 0.3 if (spread 9, 12).look
7. sleep 0.25
8. end
- 9.
10. **song()**

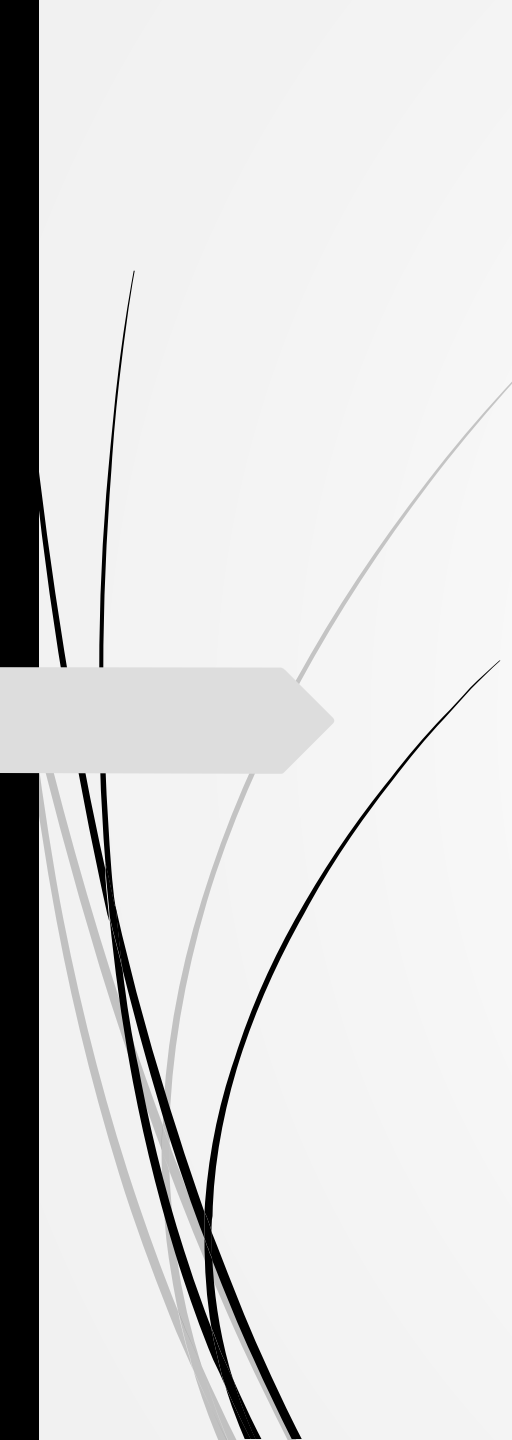


Let's explore



Exploring with Sonic Pi

- ▶ Sonic Pi's built-in help
 - ▶ Tutorials
 - ▶ Examples
 - ▶ Synths
 - ▶ Fx
 - ▶ Samples
 - ▶ Lang(uage)
- ▶ www.JaredOLEary.com/sonic-pi



Other Platforms, Resources, and Communities

Scratch

The screenshot shows the Scratch website interface. At the top, there is a blue navigation bar with the Scratch logo, links for 'Create', 'Explore', 'Discuss', 'About', and 'Help', a search bar, and links for 'Join Scratch' and 'Sign in'. The main content area features a project titled 'Beatbox Machine' by 'DTTechnology'. The project thumbnail shows a man's face with a green flag icon overlaid. To the right of the thumbnail, there are statistics: '16 scripts' and '0 sprites', and a 'See inside' button. Below the thumbnail, there is an 'Instructions' section with text: 'This example project is all about making stop motion beatboxing that can be performed with a keyboard. Use the left, up, and right arrows to make drum beats with funny pictures. Press the spacebar to play a drum beat. Or, after pressing Q, you can use the numbers keys to change the speed while pressing A, W, or D.' Below the instructions is a 'Notes and Credits' section. At the bottom of the project page, there are tags for 'beatbox' and 'music', a 'Shared: 24 Apr 2015' date, a 'Modified: 14 Jan 2016' date, and interaction icons for stars (5), hearts (5), eyes (535), and a tree icon (6). At the very bottom, there are buttons for 'Comments (26)', 'Remixes (5)', and 'View all'.

EarSketch

EarSketch ABOUT CONTACT DISCUSS Username Password Create / Reset Account

Digital Audio Workstation

Effects 1 2 3 4 5 6 7 8 9

1 S M

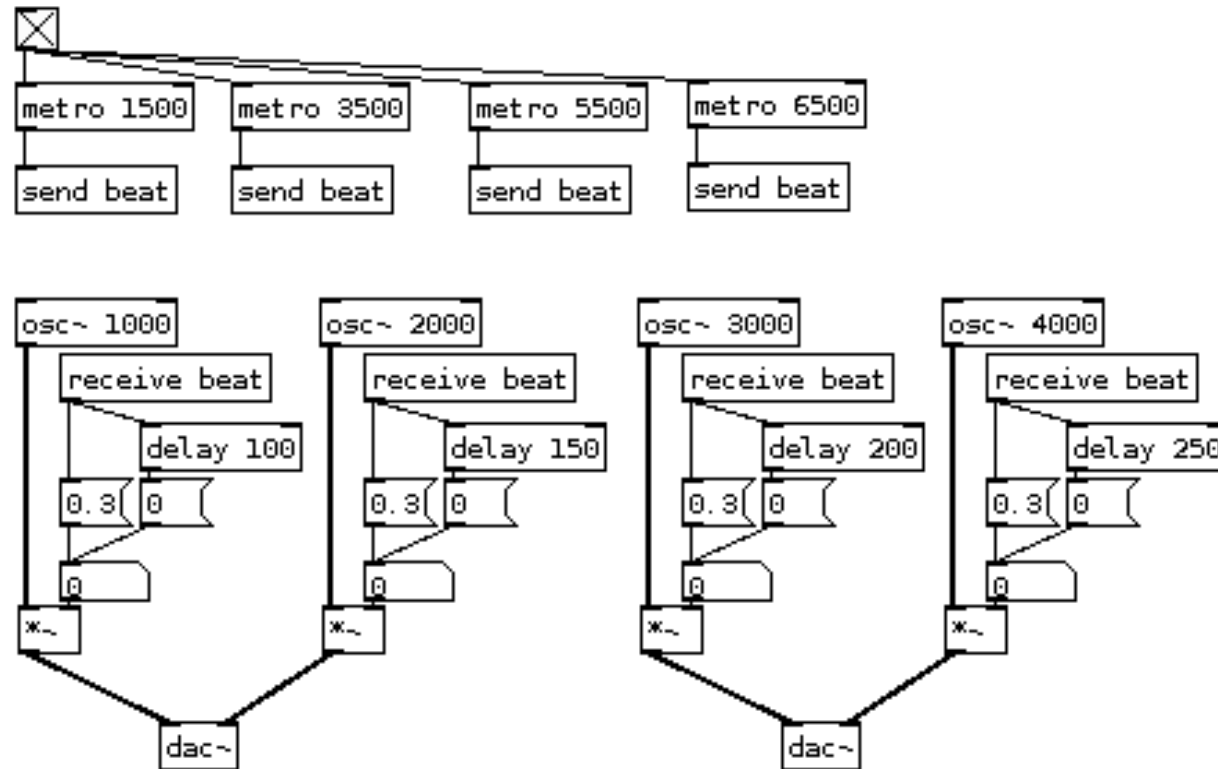
2 S M cc cc cc cc cc cc cc cc cc cc cc

{ } Code Editor test.py Run

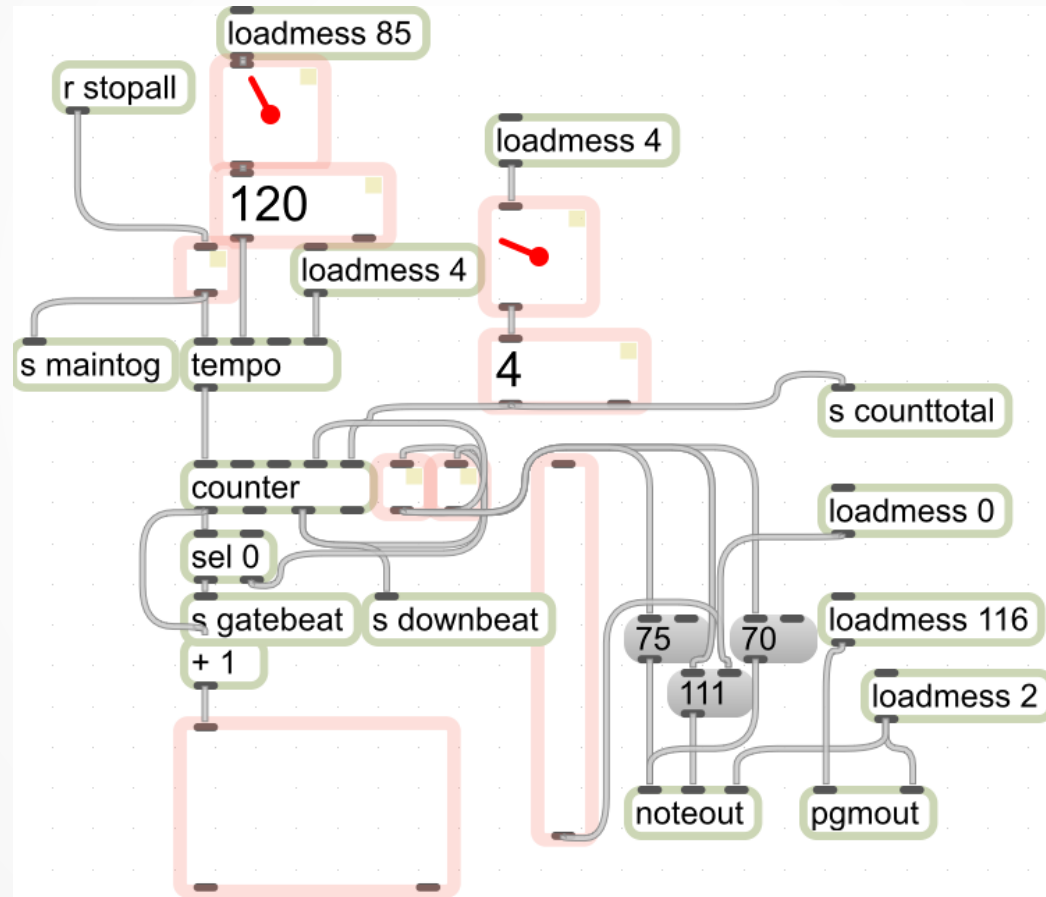
```
2 # Best played at 82 to 92 beats per minute
3
4 from earsketch import *
5
6 init()
7 setTempo(88)
8
9 bass = OS_LOWTOM01
10 snare = OS_SNARE01
11 hiOpen = OS_OPENHAT01
12 hiClosed = OS_CLOSEDHAT01
13 hats = [hiClosed, hiOpen]
14 bassSnare = [bass, snare]
15
16 amenbeat1 = "0+0+1++1-1001++1"
17 amenbeat2 = "0+0+1++1-100--1+"
```

Running script...
Script ran successfully.

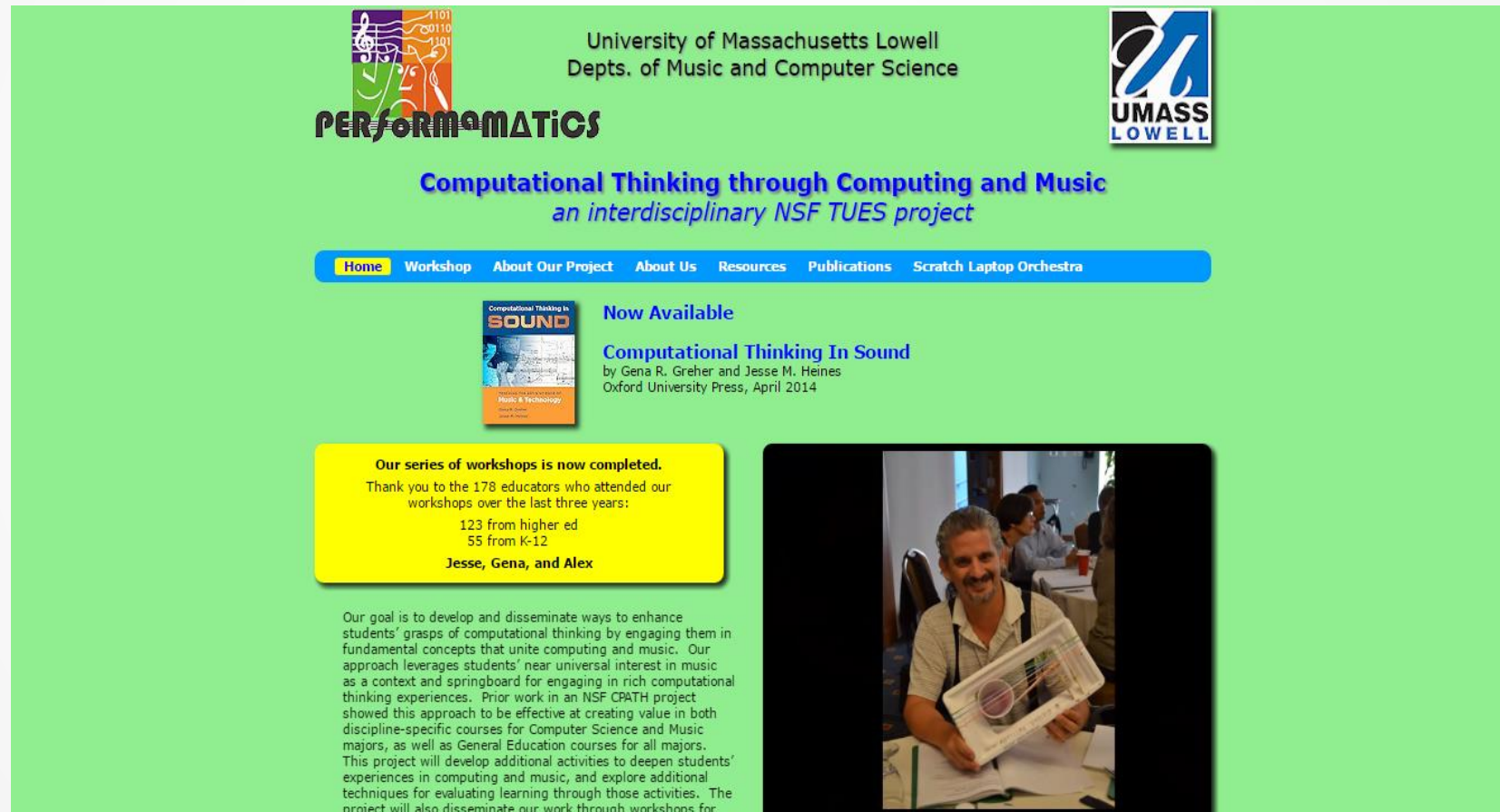
Pure Data (Pd)



MAX for Live and MAX(/MSP)



Performamatics



The screenshot shows the homepage of the Performamatics project. At the top left is a logo with a treble clef and binary code. To its right is the text "University of Massachusetts Lowell Depts. of Music and Computer Science". Further right is the UMASS Lowell logo. Below these is the title "PERFORMAMATICS" in a stylized font. Underneath is the subtitle "Computational Thinking through Computing and Music" and "an interdisciplinary NSF TUES project". A blue navigation bar contains links: Home, Workshop, About Our Project, About Us, Resources, Publications, and Scratch Laptop Orchestra. Below the navigation bar is a section titled "Now Available" featuring a book cover for "Computational Thinking In SOUND" by Gena R. Greher and Jesse M. Heines, published by Oxford University Press in April 2014. A yellow box contains the text: "Our series of workshops is now completed. Thank you to the 178 educators who attended our workshops over the last three years: 123 from higher ed, 55 from K-12. Jesse, Gena, and Alex". Below this is a paragraph of text describing the project's goal to enhance students' understanding of computational thinking through music. On the right side of the page is a photograph of a man smiling and holding a book.

University of Massachusetts Lowell
Depts. of Music and Computer Science

PERFORMAMATICS

UMASS
LOWELL

Computational Thinking through Computing and Music
an interdisciplinary NSF TUES project


Home Workshop About Our Project About Us Resources Publications Scratch Laptop Orchestra

Now Available

Computational Thinking In Sound
by Gena R. Greher and Jesse M. Heines
Oxford University Press, April 2014

Our series of workshops is now completed.
Thank you to the 178 educators who attended our workshops over the last three years:
123 from higher ed
55 from K-12
Jesse, Gena, and Alex

Our goal is to develop and disseminate ways to enhance students' grasps of computational thinking by engaging them in fundamental concepts that unite computing and music. Our approach leverages students' near universal interest in music as a context and springboard for engaging in rich computational thinking experiences. Prior work in an NSF CPATH project showed this approach to be effective at creating value in both discipline-specific courses for Computer Science and Music majors, as well as General Education courses for all majors. This project will develop additional activities to deepen students' experiences in computing and music, and explore additional techniques for evaluating learning through those activities. The project will also disseminate our work through workshops for



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TOPLAP

TOPLAP



About Live Coding and TOPLAP

TOPLAP wiki (manifesto, software, etc)

Discussion forum

Suggest a link / contact

Credits

Events

Call for submissions

Pictures

Music

Videos

Software

TOPLAP Tweets

Flickr

Facebook

Other tweets about livecoding



Graphics, Software

Afterglow 0.2.1

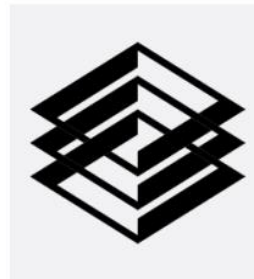
This weekend I pushed out the most feature-packed release of Afterglow yet. It incorporates a bunch of lighting effects I created in preparing for an all-night Psy-Trance show, as well as everything I learned in preparing for and running that

April 4, 2016 / No comments



Events, Music

'Amorphaux' EP Release Party



Events, Music

Eulerroom

Eulerroom is an idea that's been developing for a while, of streaming events of a live coding and/or algorave nature. After a few attempts, we're doing the first 'proper' event on 9th April at Access Space in Sheffield, from 20:30pm



Graphics, Hardware, Software

Wayang: Draw on the Push 2 from Java

If you are interested in using the Push 2 from Java, Clojure, or another JVM language, there is some good news. Last week Ableton finally released documentation on how to control the Push 2 hardware, both from MIDI for the

March 15, 2016 / No comments



Events, Music, Uncategorized

Minnesota Algorave #1

An Algorave is set to hit the midwest United States on April 15, 2016 at the Hopkins Depot in Hopkins, Minnesota. The lineup will include: bgold (Tidal) Blaerg (Tidal) Kindohm (Tidal) Obi-Wan Codenobi (The Force) Facebook event

details: facebook.com/events/1562180704092258
The Minneapolis area's

March 14, 2016 / No comments

Let's talk

- ▶ www.JaredOLEary.com
 - ▶ Presentations
 - ▶ Coding Live Music with Sonic Pi

