

Intersections of Popular Musicianship and Computer Science

Jared O'Leary

[BootUp PD](#)



What's the plan?

- Who am I?
- Hardware practices
- Software practices
- Potential implications and considerations
- Resources to learn more
- Discussion throughout

How to reach the resources

- www.JaredOLeary.com
- Presentations
 - Intersections of Popular Musicianship and Computer Science (2022)





Who am I?

- All grades K-20+
- Experiences in education
 - Drumline/percussion, general music, large and small ensembles, music education, music technology, etc.
 - Coding, computer science, and makerspaces
- Director of Education & Research at [BootUp PD](#)
- [Link to my CV](#)



Hardware Practices

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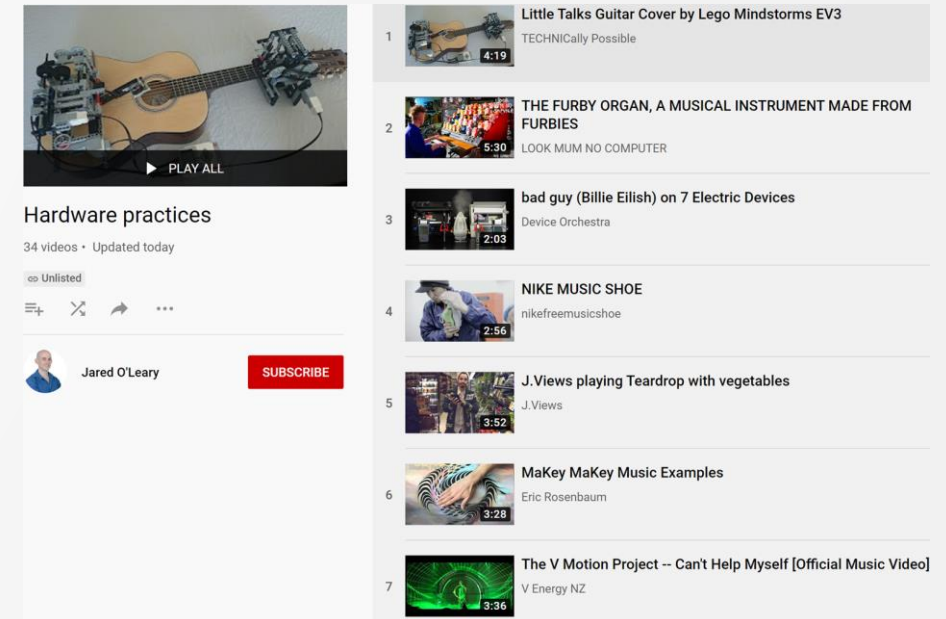


Some examples

- [Circuit-bending sounds and music](#)
- [Modifying electronic hardware](#)
 - [Augmenting hardware](#)
- [Designing and building simple electronic devices](#)
- [Or complex electronic devices](#)
- [More, visual examples of hardware modifications](#)

Let's explore some hardware practices

- [YouTube playlist](#)
- What CS practices and concepts are evident?
- What music-related practices and concepts are evident?





Software Practices

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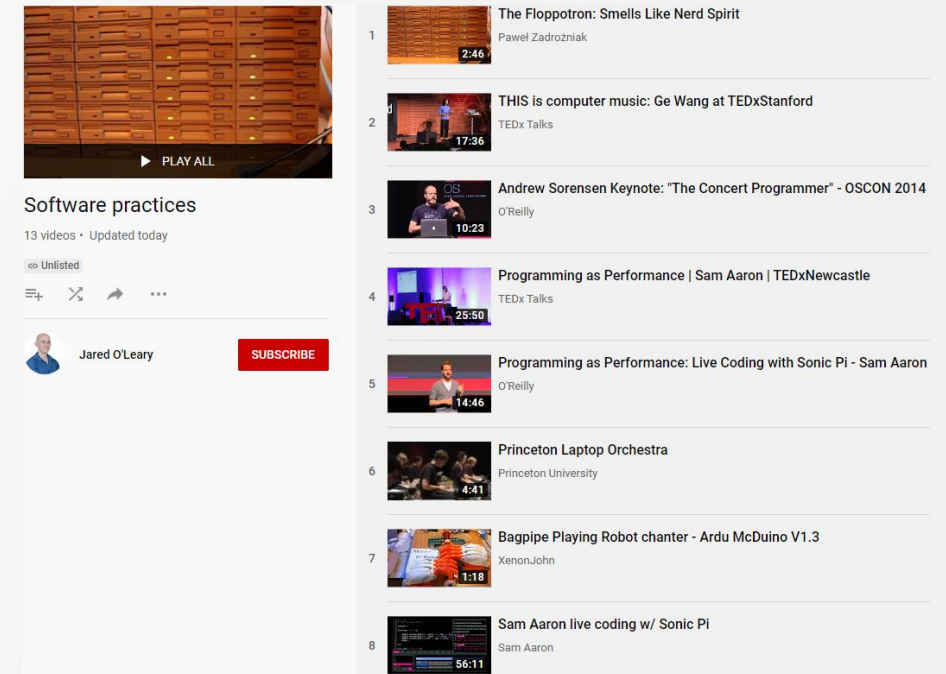


Some examples

- [Creating and modifying retro music software](#)
 - [Using graphical programming languages](#)
- [Composing with code](#)
- [Creating trap with code](#)
- [Performing with code](#)

Let's explore some software practices

- [YouTube playlist](#)
- [Sonic Pi examples](#)
- What CS practices and concepts are evident?
- What music-related practices and concepts are evident?



Software practices

13 videos • Updated today

Unlisted

Jared O'Leary [SUBSCRIBE](#)

- 1 The Floppotron: Smells Like Nerd Spirit
Pawel Zadrozniak 2:46
- 2 THIS is computer music: Ge Wang at TEDxStanford
TEDx Talks 17:36
- 3 Andrew Sorensen Keynote: "The Concert Programmer" - OSCON 2014
O'Reilly 10:23
- 4 Programming as Performance | Sam Aaron | TEDxNewcastle
TEDx Talks 25:50
- 5 Programming as Performance: Live Coding with Sonic Pi - Sam Aaron
O'Reilly 14:46
- 6 Princeton Laptop Orchestra
Princeton University 4:41
- 7 Bagpipe Playing Robot chanter - Ardu McDuino V1.3
XenonJohn 1:18
- 8 Sam Aaron live coding w/ Sonic Pi
Sam Aaron 56:11



Potential Implications and Considerations

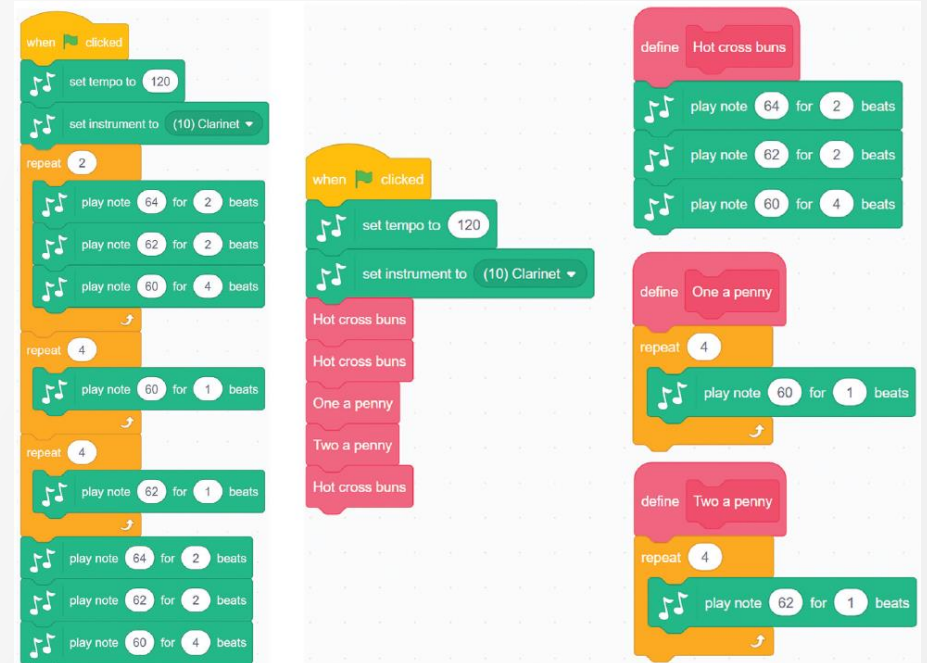


Interconnected practices

- [Interconnected practices from my dissertation:](#)
 - (a) Composition practices, (b) performance practices, (c) maker practices, (d) coding practices, (e) entrepreneurial practices, (f), visual art practices, and (g) community practices
- [Another example of combined practices](#)

General considerations

- Whose standards?
- Where does this fit in [SAMR?](#)
- New affordances comes with new constraints
- How much time for CS vs music making?



Considerations for working with music educators

- Consider [SAMR](#) in relation to music making
- Send them to me
- Start small
- Utilize your strengths
- Share what you're learning with kids

```
1 2.times do
2   play :e, release: 2
3   sleep 2
4   play :d, release: 2
5   sleep 2
6   play :c, release: 4
7   sleep 4
8 end
9
10 4.times do
11   play :c
12   sleep 1
13 end
14
15 4.times do
16   play :d
17   sleep 1
18 end
19
20 play :e, release: 2
21 sleep 2
22 play :d, release: 2
23 sleep 2
24 play :c, release: 4
25 sleep 4
```



Resources to Learn More



Pages on my website

- [Music & Coding](#)
 - Max/MSP
 - Scratch
 - Sonic Pi
 - Swift
- [Presentations](#)
- [Publications](#)



Free publications on this topic

- O'Leary, J. D. (2018). [A corpus-assisted discourse analysis of music-related practices discussed within chipmusic.org](#). *Dissertation*.
- Benedict, C. & O'Leary, J. (2019). [Reconceptualizing “music making:” Music technology and freedom in the age of neoliberalism](#). *Action, Criticism, and Theory for Music Education*, 18(1), 26-43.



Other publications on this topic

- O'Leary, J. (2020). [Intersections of popular musicianship and computer science practices](#). *Journal of Popular Music Education*.
- O'Leary, J. (2020). [Making music with circuit-bent children's toys](#). In *Aligning Music to STEM: Theory and Practice for Middle School General Music*, edited by Frank Abrahams (pp. 203-208). Chicago: GIA Publications, Inc.
- O'Leary, J. (2020). [Hip Hot Cross Buns](#). In *The Music Technology Cookbook: Ready-Made Recipes for the Classroom*, edited by adam patrick bell (pp. 301-309). Oxford: Oxford University Press.
- O'Leary, J. (in press). Computer science & popular music education. In *Places and Purpose of Popular Music Education: Perspectives from the Field*, edited by Bryan Powell and Gareth Dylan Smith (pp. 184-188). Chicago: Intellect Ltd.

#CSK8 Podcast

- The [#CSK8 Podcast](#) explores research, experiences, and perspectives on computer science education with a focus on grades K-8.
- [Music & CS episodes](#)



Free music & CS projects for K-8

- K-2
 - [#9 Musical Instrument](#)
- 3+
 - [#13 Beatbox Machine](#)
 - [#14 What Can You Create? Music](#)
 - [#25 Music Player](#)
 - [Link to student-facing resources](#)





Let's Chat

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