

# Sound Synthesis

Andrés Pérez

Digital Lutherie

Master en Música para Experiencias del Entretenimiento  
ENTI-UB

2018/2019

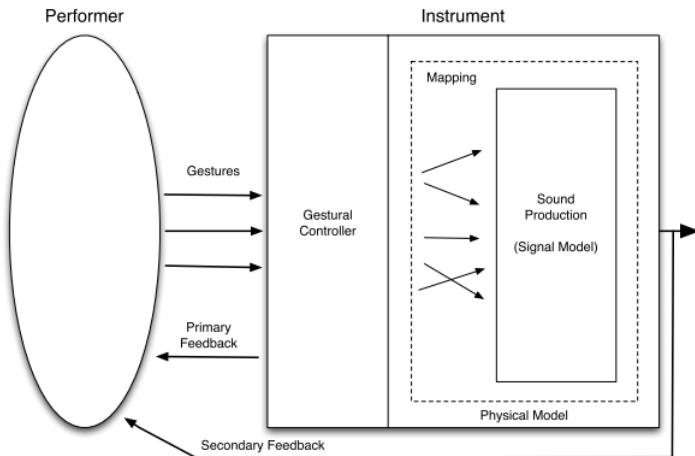
# Outline

Sound Synthesis

# Outline

Sound Synthesis

# Sound Synthesis



Wanderley, M. M. (2001). Performer-Instrument Interaction: Applications to Gestural Control of Sound Synthesis. PhD thesis, University Paris 6.

# Sound Synthesis

SPOILER: This is not a sound synthesis course...

# Sound Synthesis

*"It should be made clear that digital instruments output is not limited to sound synthesis. New instruments are not forced to remain at the 'sound and note level'; [...] new digital instruments can also embrace algorithmic composition, they can deal with tempo, with multiple and otherwise conventionally unplayable concurrent musical lines, with form, they can respond to performers in complex, not always entirely predictable ways. [...] we will not be distinguishing, for instance, between 'playing with sound' or 'with form', or with both at the same time."*<sup>1</sup>

---

<sup>1</sup>Jordà, S. (2004). Digital Instruments and Players : Part II – Diversity, Freedom and Control, (January 2004).

*"The concept of 'note', the structural backbone of Western music, becomes an option rather than a necessity, now surrounded by (macrostructural) form on one side, and (microstructural) sound on the other."*<sup>2</sup>

---

<sup>2</sup>Jordà, S. (2007). Interactivity and live computer music. Computer Music Journal.





# Sound Synthesis

## Sonic Pi

*The Live Coding Music Synth for Everyone.*

*Welcome to the **future of music**.*

**Simple** *enough for computing and music lessons.*

**Powerful** *enough for professional musicians.*

**Free** *to download with a friendly tutorial.*

**Diverse** *community of over one million live coders.*

**Learn to code** *creatively by composing or performing music in an incredible range of styles from **Classical & Jazz** to **Grime & EDM**.*

# Sound Synthesis

The screenshot displays the Sonic Pi application window. At the top, there is a control bar with buttons for Run, Stop, Rec, Save, Load, Size, Scope, Info, Help, and Prefs. Below this, three pink audio waveforms are visible, representing the output of the synthesis. The main area is divided into three sections: a code editor on the left, a log window on the right, and a sidebar on the bottom left. The code editor contains the following code:

```
1 # Simple Additive Synthesis:
2
3 use_synth_defaults sustain: 8, amp: 3
4 synth :saw, note: :e4, pan: -1
5 synth :saw, note: :e2, pan: 1
6 synth :square, note: :e5, amp: 0.7
```

The log window on the right shows the following output:

```
Log
>> Studio: Resuming SuperCollider audio server
>> Starting run 2

{run: 2, time: 0.0}
├─ synth :saw, {amp: 3, sustain: 8.0, pan: -1, note: 64.0}
├─ synth :saw, {amp: 3, sustain: 8.0, pan: 1, note: 40.0}
└─ synth :square, {amp: 0.7, sustain: 8.0, note: 76.0}
```

The sidebar on the bottom left contains a list of tutorials and examples, with 'Tutorial' selected. The bottom right corner of the window displays the Sonic Pi logo and the text 'music\_as :code' and 'code\_as :art'. The status bar at the very bottom indicates 'Sonic Pi v2.11 on Raspberry Pi 3'.

# Sound Synthesis

Very nice [tutorial](#) included...