



"How to make Sound??"

Creation tools for sound/music

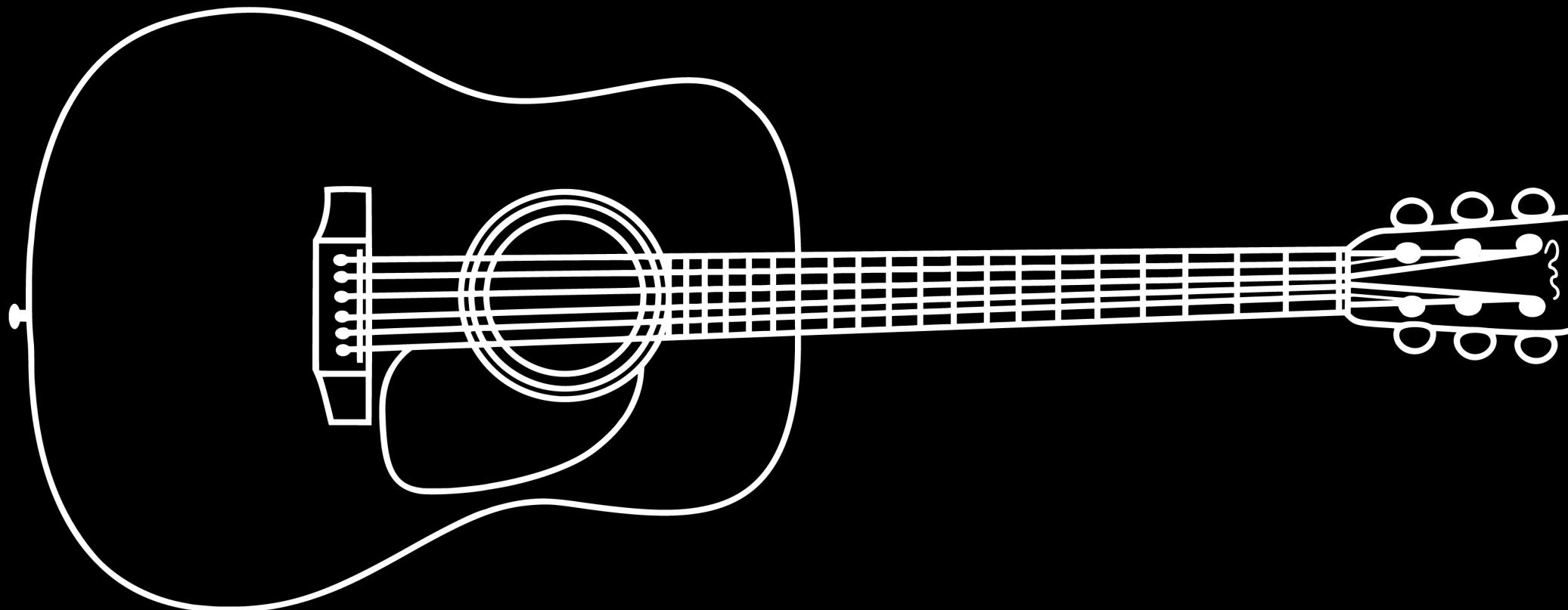
- A Brief introduction to Digital Audio Tools
- Tools for making Digital Musical Instruments
- Strategies for Prototyping
 - DEMOs

The Three Elements of Sound



The Three Elements of Sound

Pitch / Dynamics / Tone Color



The Three Elements of Sound

Frequency / Amplitude / Waveform



Sound Editor App

Adobe Audition

<https://www.adobe.com/sg/products/audition.html>

Audacity(Free)

<https://www.audacityteam.org/>



Demo: Sound Editor

Waveform - Spectrum - Pitch

Generate Tone and Apply Effects

Sound/Music Archives

BBC Sound Effects

<https://sound-effects.bbcrewind.co.uk/>

Free Music Archive

<https://freemusicarchive.org/>

Free Sound

<https://freesound.org/>

SOUND EFFECTS 🔍 ? ☰

Showing top 300 of 33066 results Sound Mixer Sort by Filter (0)

Categories (0) Duration (0) Continents (0) Reset Filters

AUTOPLAY

Add to mixer		1:41	Gasworks - Shunting empty trucks. 1971.	Share Heart Download More detail
Add to mixer		0:46	Caves: Caving - Boulders falling into 70ft cavern (5 takes).	Share Heart Download More detail
Add to mixer		1:55	Caves: Caving - Man descending ladder.	Share Heart Download More detail
Add to mixer		1:01	Caves: Caving - 1 man constant walking up sharp incline of loose stone.	Share Heart Download More detail
Add to mixer		1:57	Caves: Caving - Stream entering cave (slight wind noise on microphone).	Share Heart Download More detail
Add to mixer		3:04	Caves: Caving - Small stream running through field.	Share Heart Download More detail
Add to mixer		1:09	Trains: Goods Yards - Coupling trucks - use at low level, in a steam railway goods yard.	Share Heart Download More detail

Play all 0 sounds added to mixer View mix

Otama Tone

Neck → Pitch Control

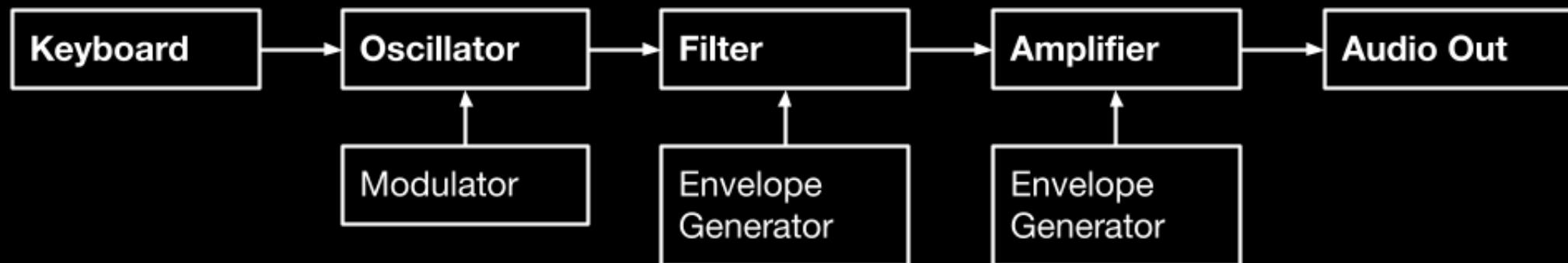
Mouth → Tone Color



Analogue Synthesizer

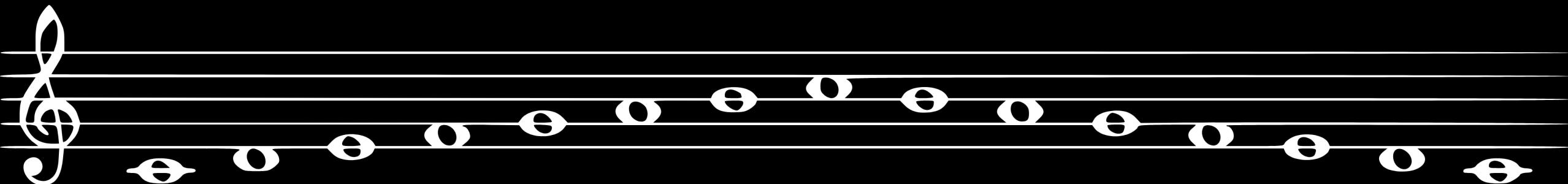


Analogue Synthesizer



The Three Elements of Music

Melody / Rhythm / Harmony

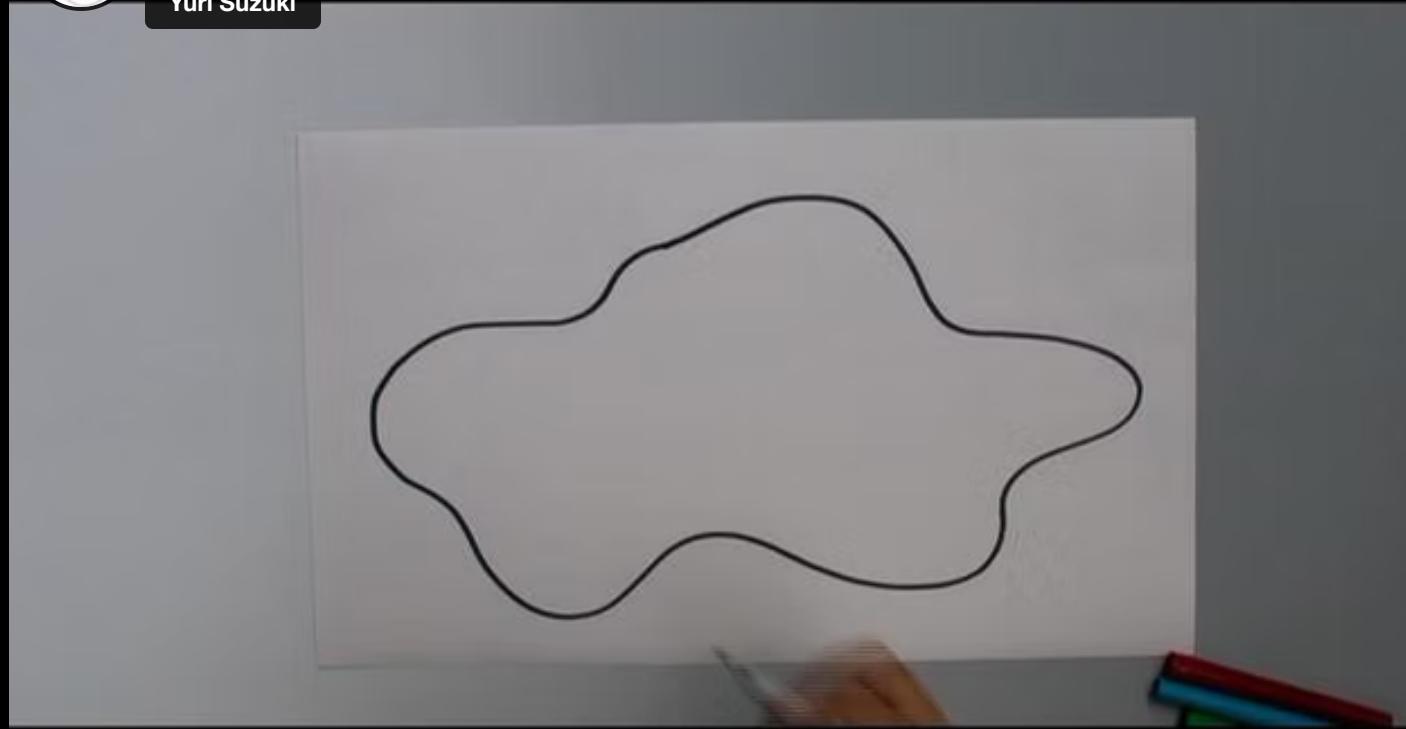






Colour Chaser 2010

Yuri Suzuki



03:09



vimeo



Music Making App

BandLab (online/free)

<https://www.bandlab.com/mix-editor>

GarageBand (mac/iOS/free)

<https://www.apple.com/sg/mac/garageband/>

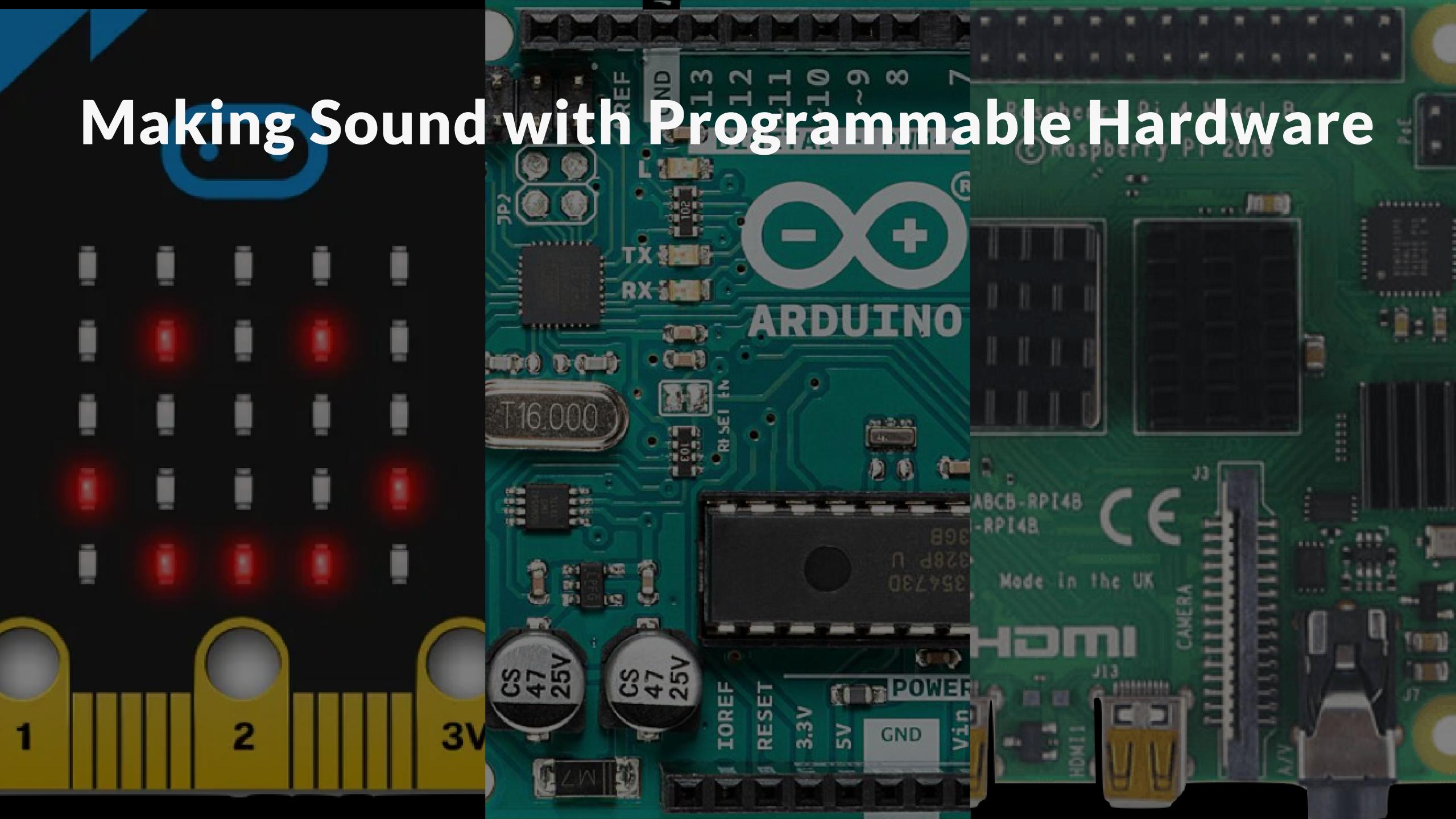
SoundBridge (win/free)

<https://soundbridge.io/>



Demo: Virtual Instruments

Making Sound with Programmable Hardware



Prototyping Strategies

- Control Existing Synthesizer (**MIDI Controller**)
- Trigger Sampled Sound (**Wav Player**)
- Generate Sound with Algorithm (**Digital Synth**)
- Actuate Physical Instrument (**Phygital Synth**)







Arduino

Tone Library

<https://github.com/daniel-centore/arduino-tone-library>

USB-MIDI Library

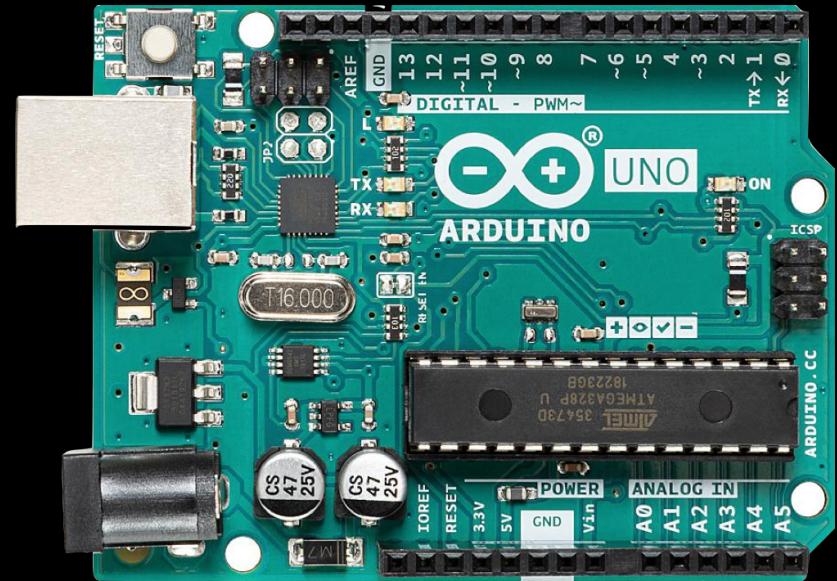
<https://github.com/BlokasLabs/usbmidi>

Arduino Wav Trigger (polyphonic sound player for Arduino)

<https://www.sparkfun.com/products/13660>

Digital Audio Library

<https://sensorium.github.io/Mozzi/>



micro:bit

MIDI Controller

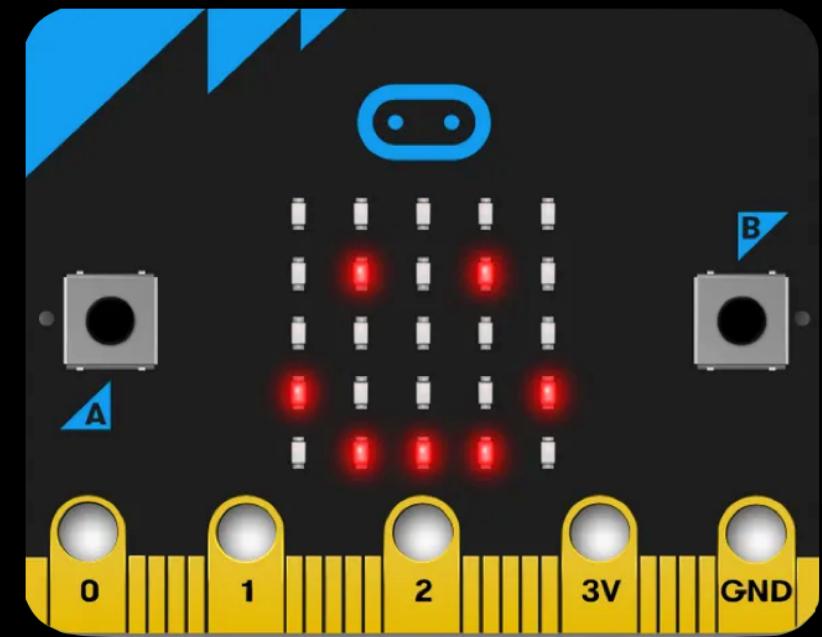
<https://makecode.microbit.org/pkg/microsoft/pxt-midi>

Audio player (sampler)

<https://microbit-micropython.readthedocs.io/en/v2-docs/audio.html>

Tone Generator

<https://makecode.microbit.org/reference/music/play-tone>



Programming Sound

p5.sound

JavaScript library to create
WebAudio

<https://p5js.org/reference/#/libraries/p5.sound>



Reference

Search reference

p5.sound library

p5.sound extends p5 with [Web Audio](#) functionality including audio input, playback, analysis and synthesis.

[p5.SoundFile](#): Load and play sound files.

[p5.Amplitude](#): Get the current volume of a sound.

[p5.AudioIn](#): Get sound from an input source, typically a computer microphone.

[p5.FFT](#): Analyze the frequency of sound. Returns results from the frequency spectrum or time domain (waveform).

[p5.Oscillator](#): Generate Sine, Triangle, Square and Sawtooth waveforms. Base class of [p5.Noise](#) and [p5.Pulse](#).

[p5.MonoSynth](#) and [p5.PolySynth](#): Play musical notes

[p5.Envelope](#): An Envelope is a series of fades over time. Often used to control an object's output gain level as an "ADSR Envelope" (Attack, Decay, Sustain, Release). Can also modulate other parameters.

[p5.Delay](#): A delay effect with parameters for feedback, delayTime, and lowpass filter.

[p5.Filter](#): Filter the frequency range of a sound.

[p5.Reverb](#): Add reverb to a sound by specifying duration and decay.

[p5.Convolver](#): Extends [p5.Reverb](#) to simulate the sound of real physical spaces through convolution.

[p5.SoundRecorder](#): Record sound for playback / save the .wav file.

[p5.SoundLoop](#), [p5.Phrase](#), [p5.Part](#) and [p5.Score](#): Compose musical sequences.

[userStartAudio](#): Enable audio in a browser- and user-friendly way.

p5.sound is on [GitHub](#). Download the latest version [here](#).

[getAudioContext\(\)](#)

[userStartAudio\(\)](#)

[getOutputVolume\(\)](#)

[outputVolume\(\)](#)

[soundOut](#)

[sampleRate\(\)](#)

[freqToMidi\(\)](#)

[**p5.Envelope**](#)

[attackTime](#)

[attackLevel](#)

[decayTime](#)

[decayLevel](#)

[releaseTime](#)

[**p5.Delay**](#)

[leftDelay](#)

[rightDelay](#)

[process\(\)](#)

[delayTime\(\)](#)

[feedback\(\)](#)

 Auto-refresh

FMSynth by didny



sketch.js

Preview

```
1 let connectBtn;
2
3 let slider;
4
5 let brightness = 100;
6 let sendText = "sent:";
7 let recvText = "recv:";
8
9 let micInput;
10
11 let btnA = false;
12 let btnB = false;
13 let pitch = 0;
14 let roll = 0;
15 let light = 0;
16
17 // Oscillator variables
18 //https://p5js.org/reference/#/p5.Oscillator
19 let osc,
20     playing,
21     freq,
```

Cookies

The p5.js Editor uses cookies. Some are essential to the website functionality and allow you to manage an account and preferences.

Others are not essential—they are used for analytics and allow us to learn more about our community. **We never sell this data or use it for advertising.** You can decide which cookies you would like to allow, and learn more in our [Privacy Policy](#).

Allow AllAllow Essential

More sound programming language

Ableton Live (mac/win/trial)

<https://www.ableton.com/en/>

Max/MSP

<https://cycling74.com/products/max>

pyo: python library for audio signal processing

<http://ajaxsoundstudio.com/software/pyo/>

touchDesigner:

<https://derivative.ca/>

Week 6:

USB-MIDI Instrument Workshop