



Show Control for Sound

...on a Budget

Curtis Craig
I do things for things

Thursday, March 19 // 3:30 pm // SoundLab



Not necessarily driven by a space bar

Systems of Systems (thanks John H!)

- Lets start with what I'm leaving out
 - MIDI, OSC
 - networking, scripting, programming concepts
- IF you are trying to control a lighting console with QLab, this isn't for you
 - (Seriously, MIDI and OSC are out there, with lots of resources for how)

Linear

Types of Shows

- Start at the very beginning
- Go to the very end
- In a row
- Think of a script. Planned, organized, sequenced.
- Nope. Not today.

Non linear

Types of Shows

- What happens when we don't do things in a planned order?
- Or maybe we do things in chunks. Hybrid.

Responsive

Types of Shows

- Think of things controlled by the anyone but the operator
 - Performer, environment, audience
- What if a DJ could control an EKG display?
- How about a performer triggering a cue?
- Could the tempo of a song control some other parameter?

Programming Concepts

Some basic ideas come easy in something like, say, QLab

- Arm/Disarm
- Go to
- Targeting cues
- Scripting

These are all used to control flow, To make branching.

Hardware

Triggers

Systems of Systems

- If we don't want a spacebar to rule us?
- A way to get inputs!

Triggers



Basically a switch. On and off.



On/OFF

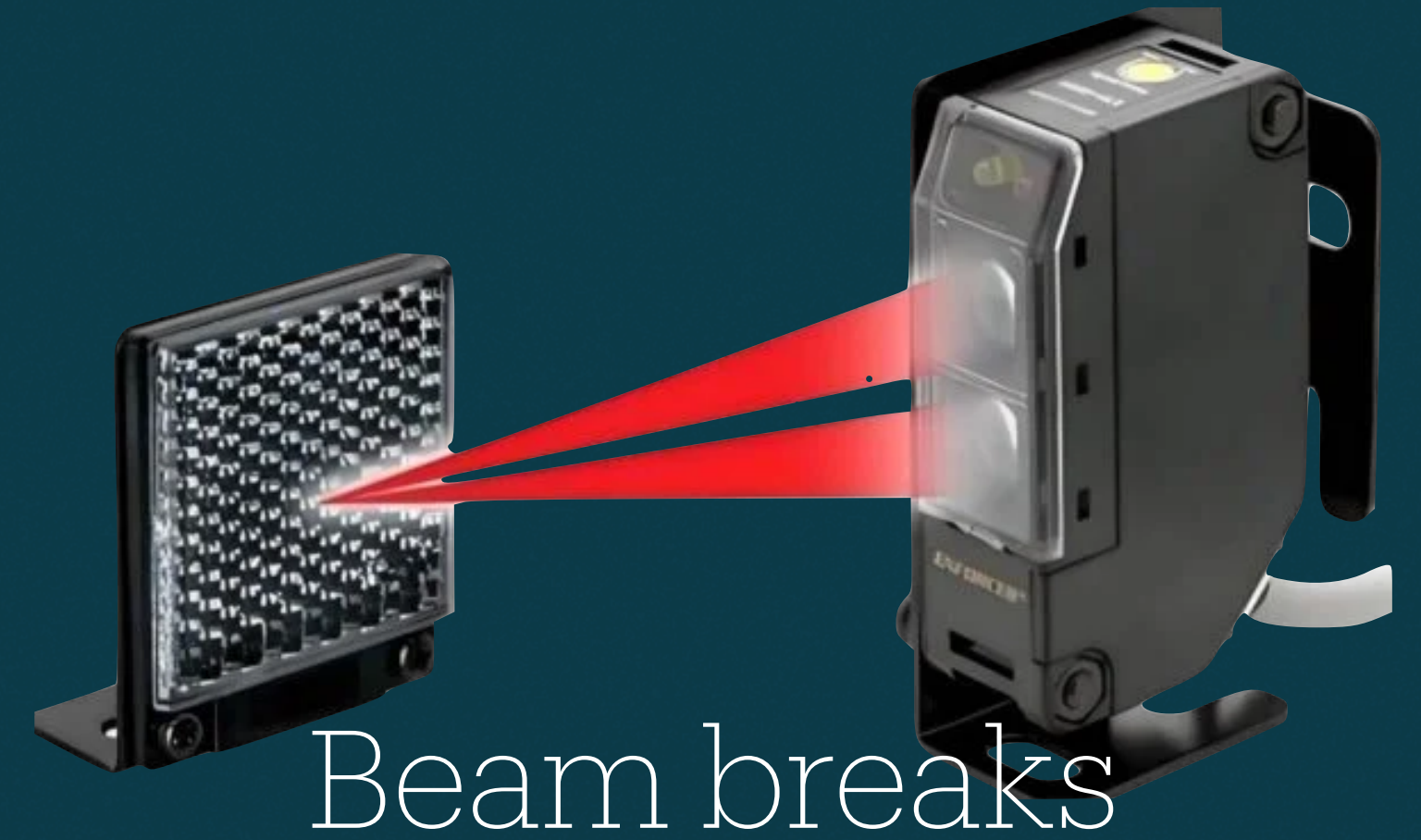


On/OFF/On

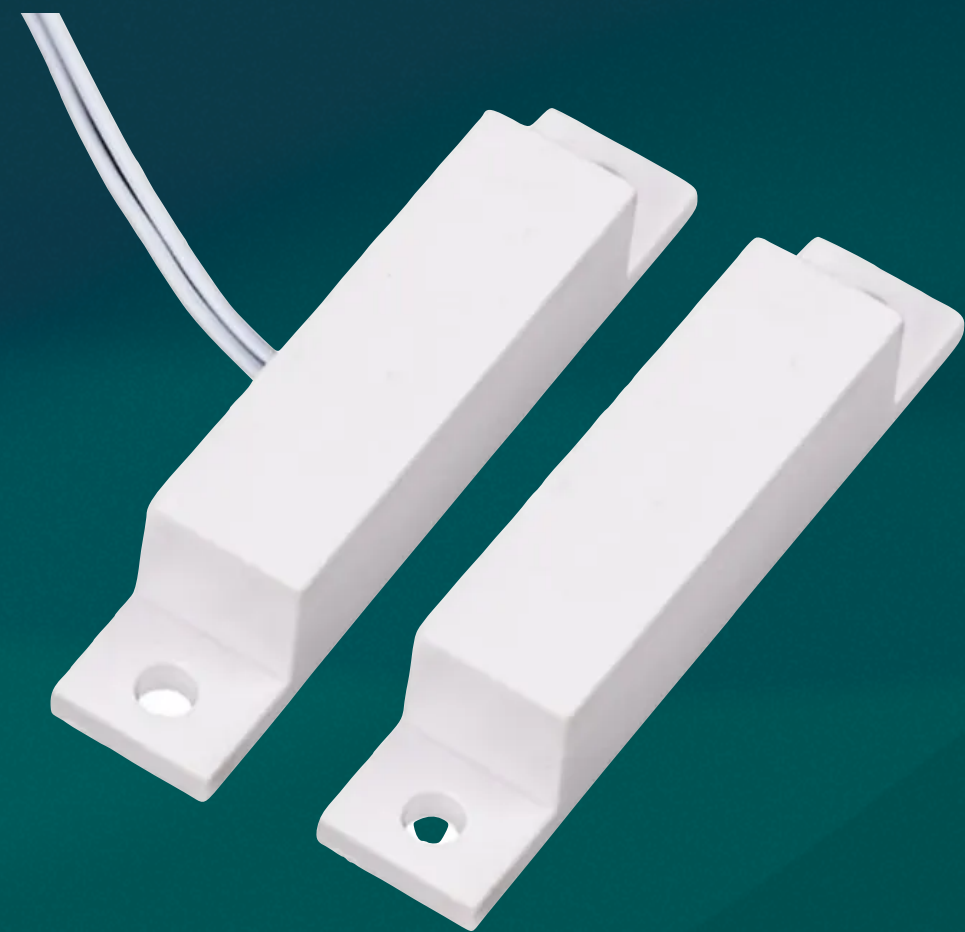


Simple switches - NO/NC devices

RF Remotes



Beam breaks



Magnetic window sensors



Sustain pedals



Triggers Theme Parks



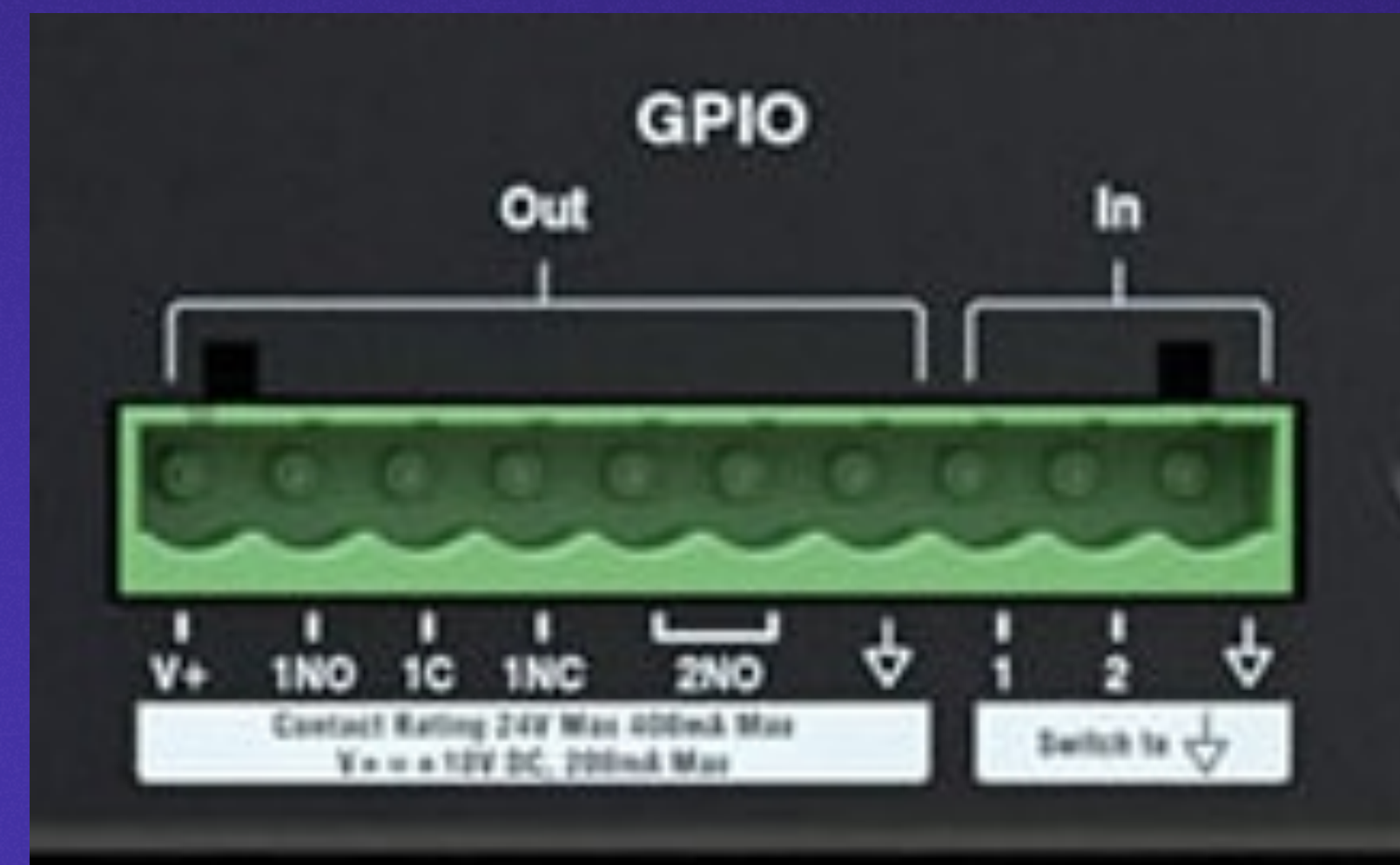
Alcorn McBride v16x

4 ethernet, serial, DMX,
contact closure, SMPTE, GPS

Triggers Theater



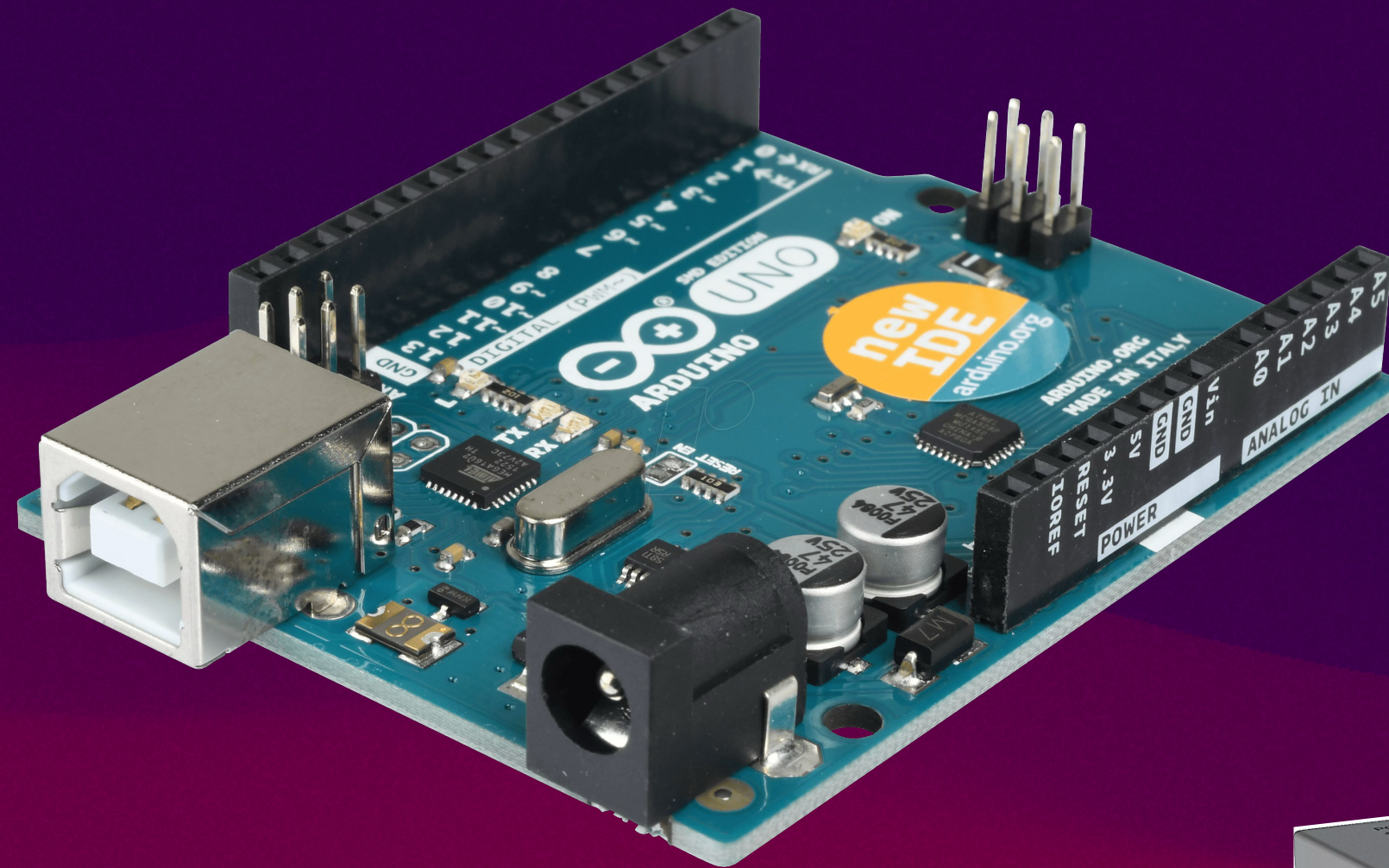
MIDI Solutions
GPIO (is this on your mixer?)



Triggers

Cheap

Microcontrollers
Drum Machines
AudioFront.net



Outputs (that aren't noise)

Systems of Systems

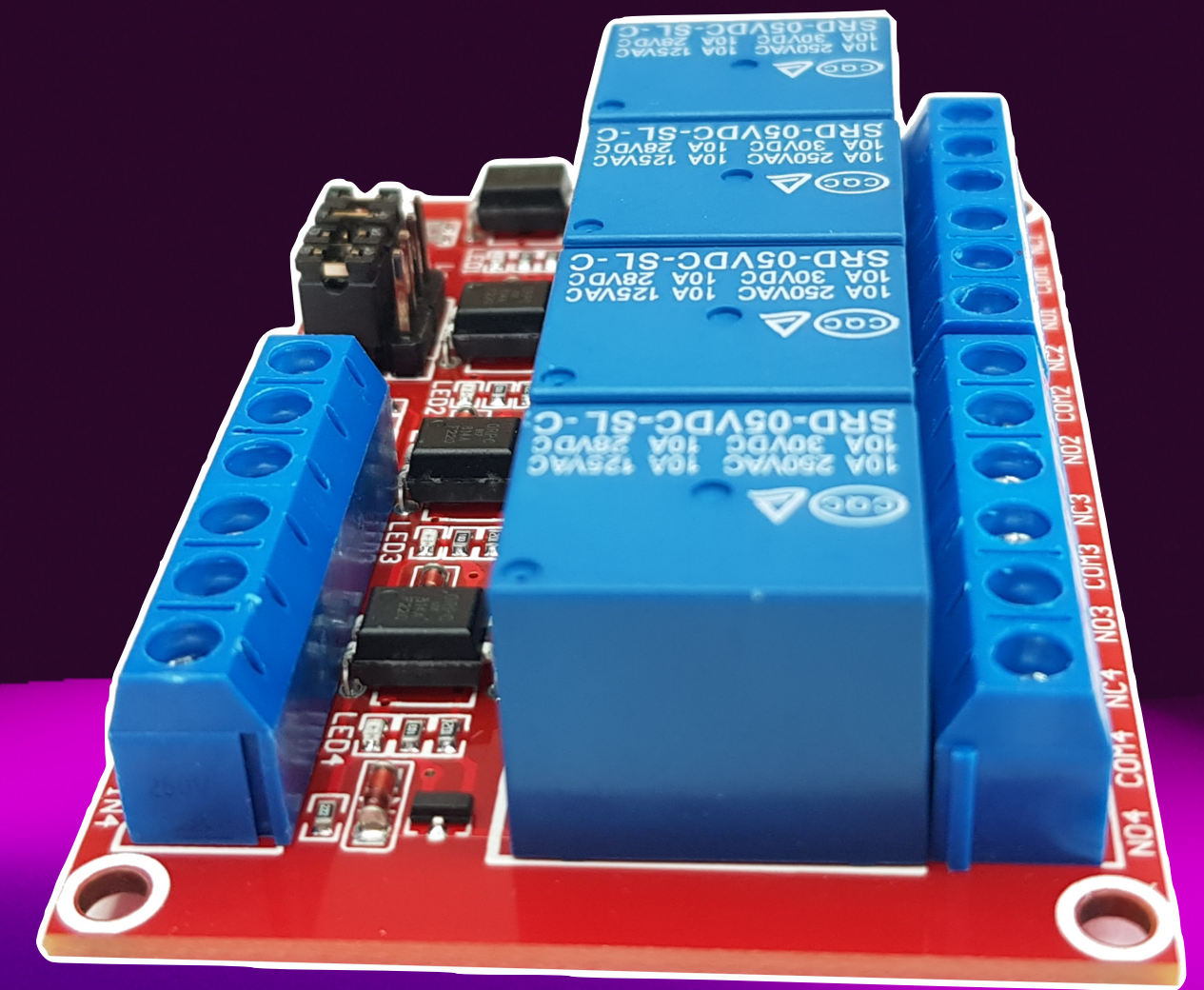
- What kinds of things can we control...
 - Actuators, servos, relays, tactile (what do these have in common?)
- And remember, we can use other devices we may have (lx console, scenic automation) thru protocols that exist - MIDI, OSC

Relays

A switch for a switch

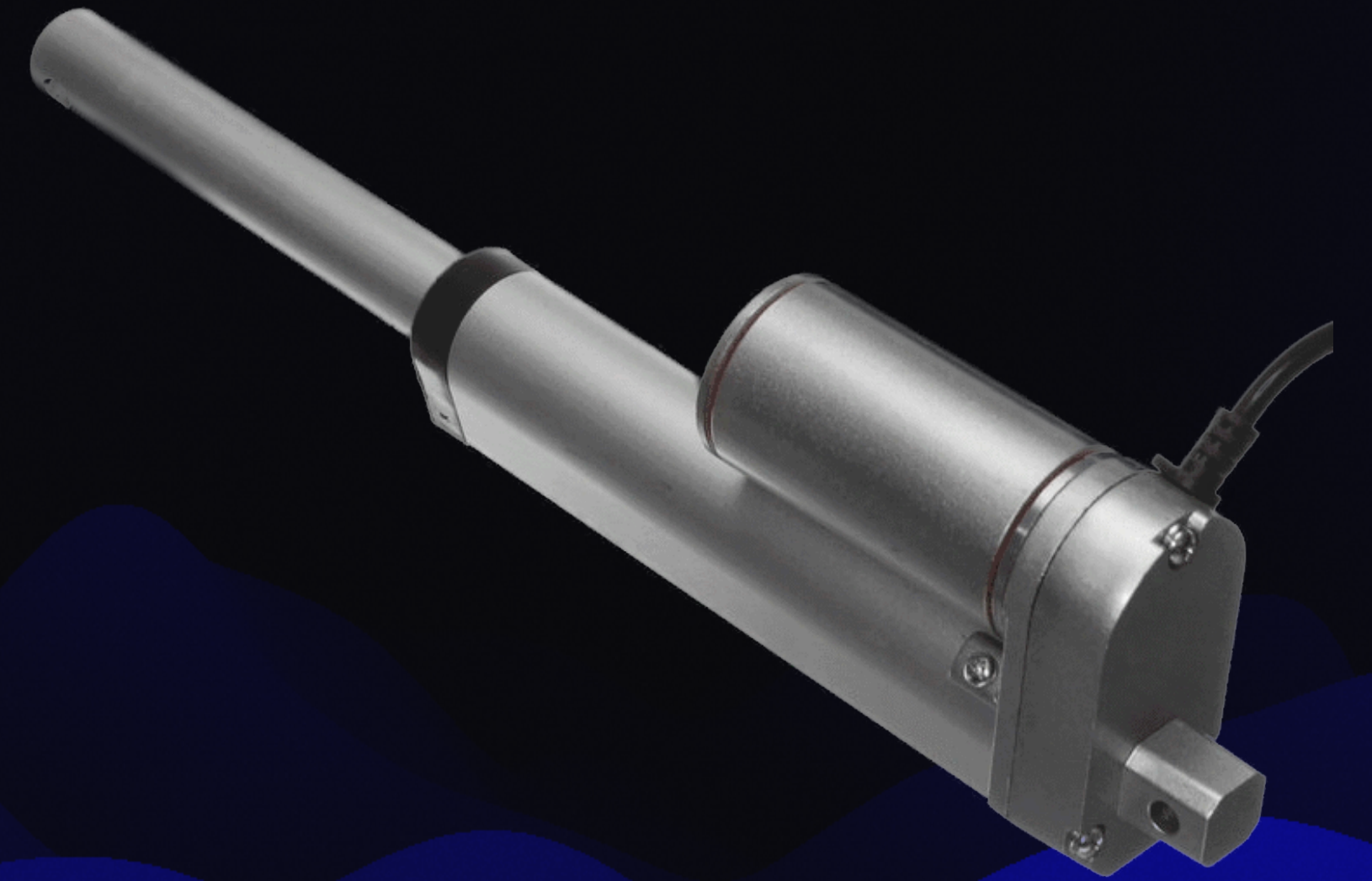
Switch high voltage with low voltage

If it's switchable - we can now control it!



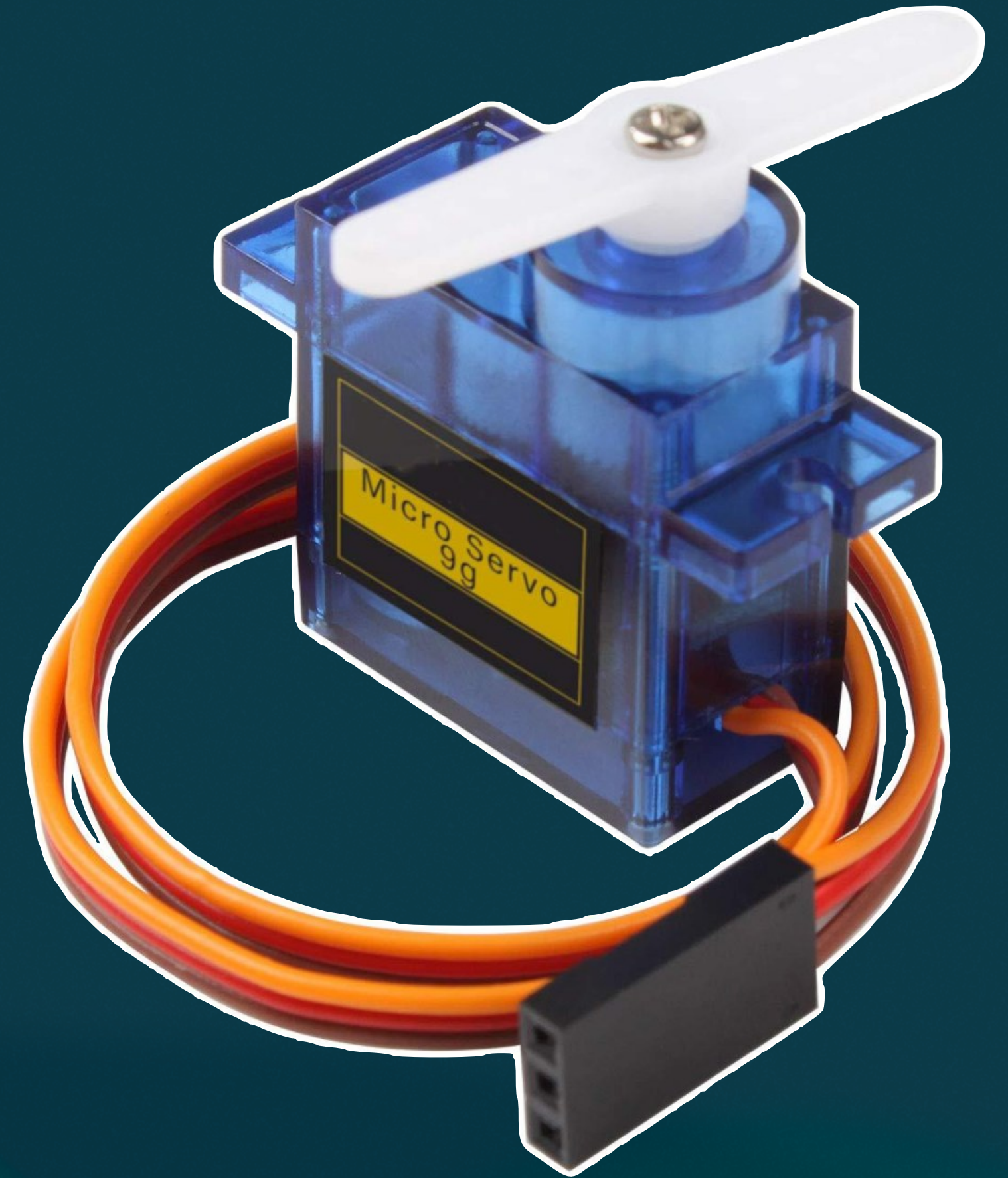
Actuators

- Single axis, push pull devices
 - A great example is in your car. The door lock.
- Apply voltage. Thingie moves.



Servos

- A little more precision, but slower
- RC car servos are a small example
- Usually require a bit more nuanced control
- Microcontrollers make superb front ends



Tactile

Buttkicker



Industrial vibration



Exciters



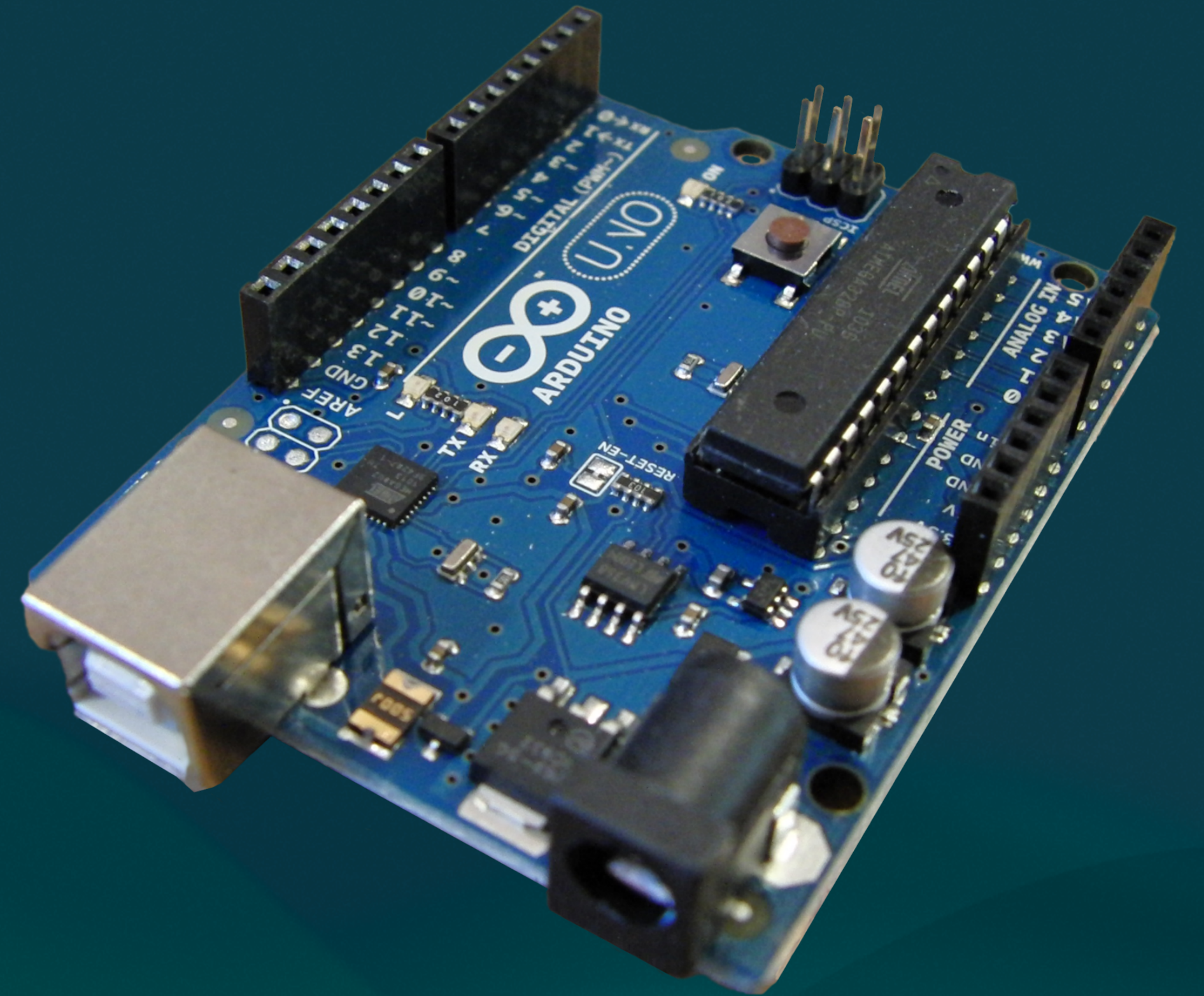
Input/Output Devices

Systems of Systems

- The microcontroller
- Haunt gear

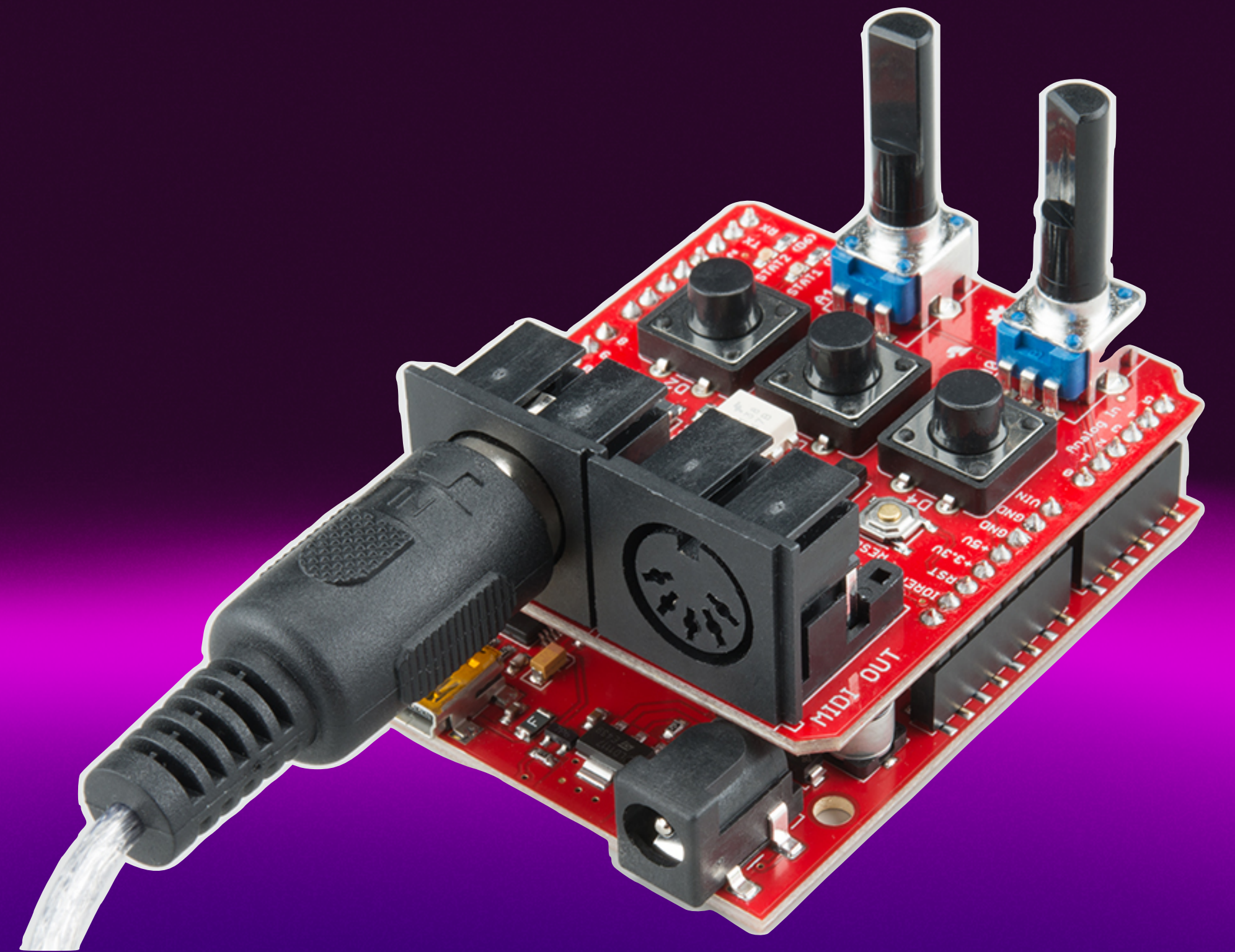
Microcontrollers

- Programmable input/output devices
- Arduino is the most popular
- Others do exist!



Microcontrollers

- Shields to add functionalities
- DMX, MIDI, Motor control, Servo, Relays are all inexpensive 'add-on' circuits to expand functionality.



Haunt gear

- Developed for haunted houses
- Capable of relays, triggers, audio (and even video) playback in stand alone boxes
- Picoboo



Software

Designing for Interaction

Capable of dynamic control

\$\$\$
<u>Max/MSP</u>
<u>Isadora</u>
<u>Medialon</u>

FREE
<u>Pure data (PD)</u>
<u>PraxisLIVE</u> or <u>Vvvv</u>
<u>Touch Designer (?)</u>

Chataigne

MAX/MSP

- Popular with musicians and composers
- Also a part of Ableton Live Suite
- Is it a programming language?

Isadora

- A design toolbox for interactivity
- Another type of a programming language

Picture Layer

- 14: Bolivia picture
- on visible
- n/a stage
- video vid-gpu
- trigger -

Motion Watcher

gestureReset

- available on
- hand count 0
- hand dist 0
- hand angle 0
- swipe -
- swipe dir 0
- circle -
- circle dir 0
- tap -
- left off
- left pos x 0
- left pos y 0
- left pos z 0
- left roll 0
- left pitch 0
- left yaw 0
- right off
- right pos x 0
- right pos y 40
- right pos z 0
- right roll 0
- right pitch 0
- right yaw 0

Comparator

- le compare output 1
- 0 value1 true -
- 0 value2 false -
- change notify

Trigger Value

- 1 value *x output 1
- trigger

Trigger Value

- 0 value *x output 0
- trigger

Live Drawing

- vid-gpu video
- on capture
- round joint type
- butt endcap type
- 11 feather amount
- 1 min distance
- 4 line width
- color
- on fade active
- 1 fade hold
- 5 fade out
- 33,3333 horz pos
- 40 vert pos
- add point
- erase curr
- erase last
- erase all
- 2560 horz size
- 1600 vert size
- n/a stage
- off bypass

Smoother

- 0 value in value out 0
- 0,5 smoothing
- 59,94 Hz frequency
- off force out

Limit-Scale Value

- 50 limit min output -33,3333
- 250 limit max
- 50 out min *x++x
- 50 out max
- 0 value

Smoother

- 40 value in value out 40
- 0,5 smoothing
- 59,94 Hz frequency
- off force out

Limit-Scale Value

- 40 limit min output -40
- 370 limit max
- 40 out min *x++x
- 40 out max
- 40 value

Isadora

Medialon

- Timelines and so much more

Medialon



But those are expensive

The background features a series of horizontal, wavy bands of color. The top portion is a dark, deep blue. Below this, there are several layers of green, ranging from a vibrant, bright green to a more muted, teal-green. The bottom portion of the image is a lighter, pale blue. The overall effect is that of a soft, ethereal landscape or perhaps a stylized representation of water or light waves.

PD

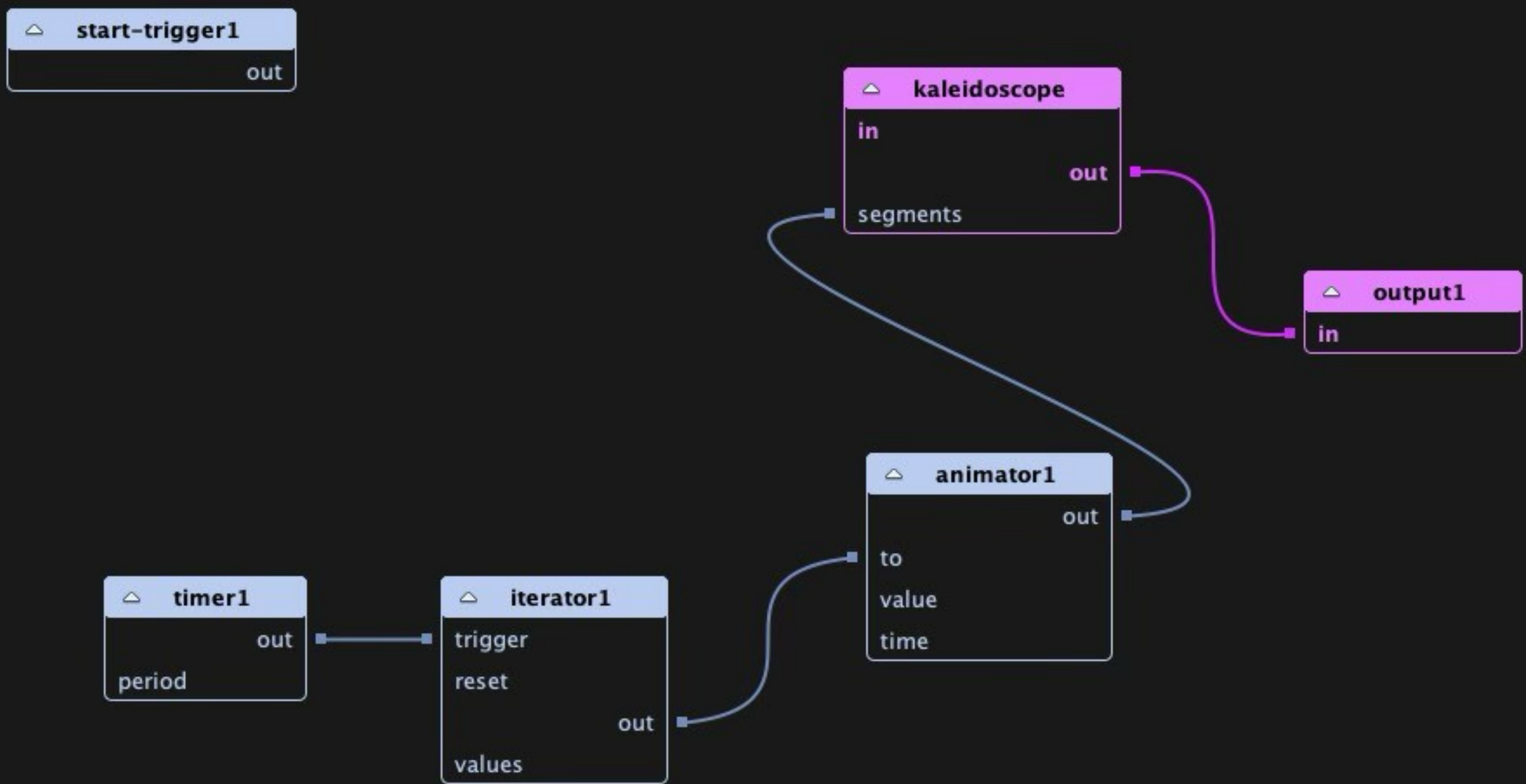
PUREDATA

- Written by the same person who originally wrote Max/MSP
- Another toolkit

PraxisLIVE

PraxisLIVE

- What about video & other media interaction?



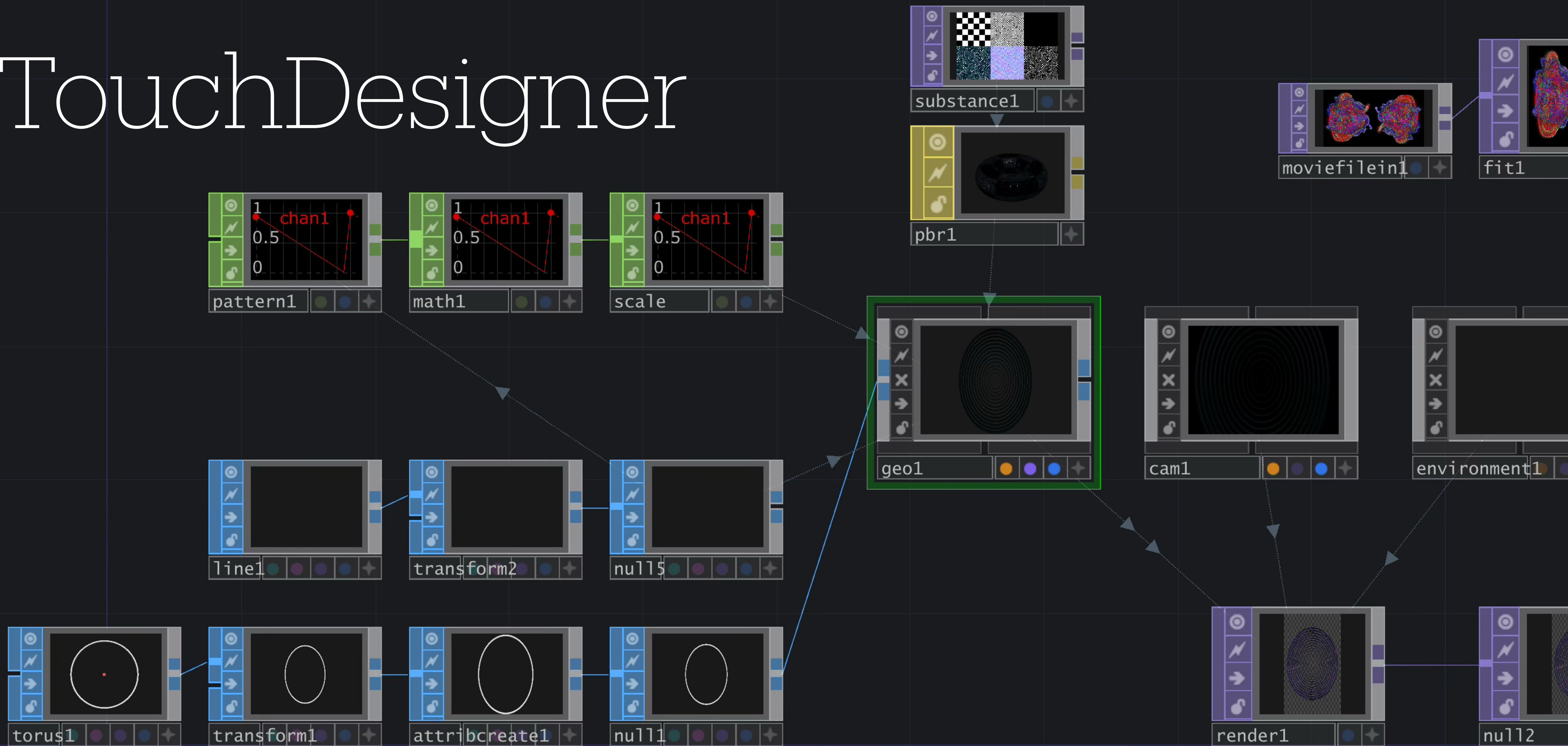
PraxisLIVE

TouchDesigner

Ok, So I cheated.

- Free for non commercial use

TouchDesigner



Chataigne

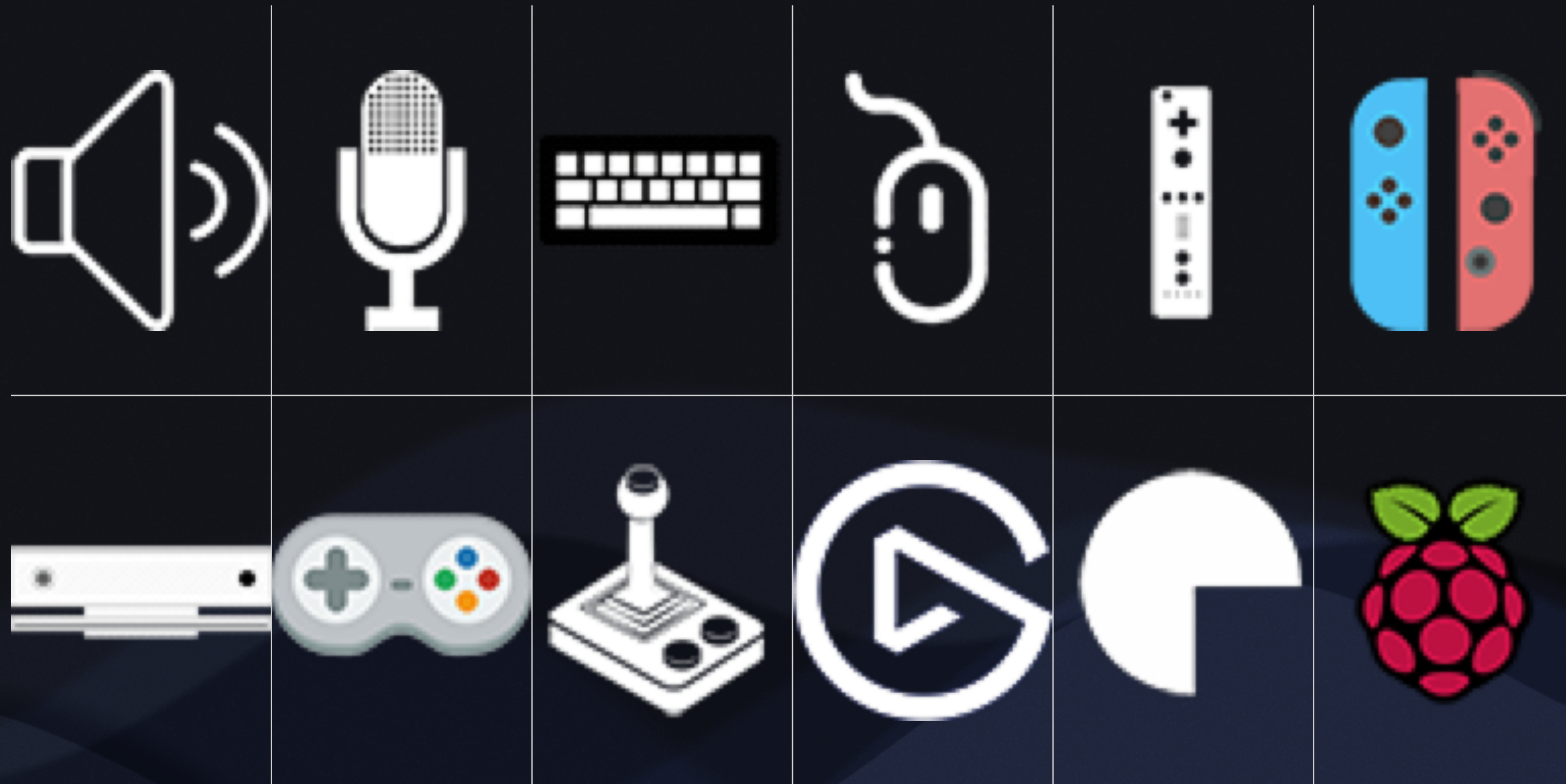
Welcome to the new new.

- Modular machine for art and technology
- This is the rosetta stone that we have been looking for
- Runs on lots of hardware (Mac, PC, RaspPI)
- Modules, state machines, sequences

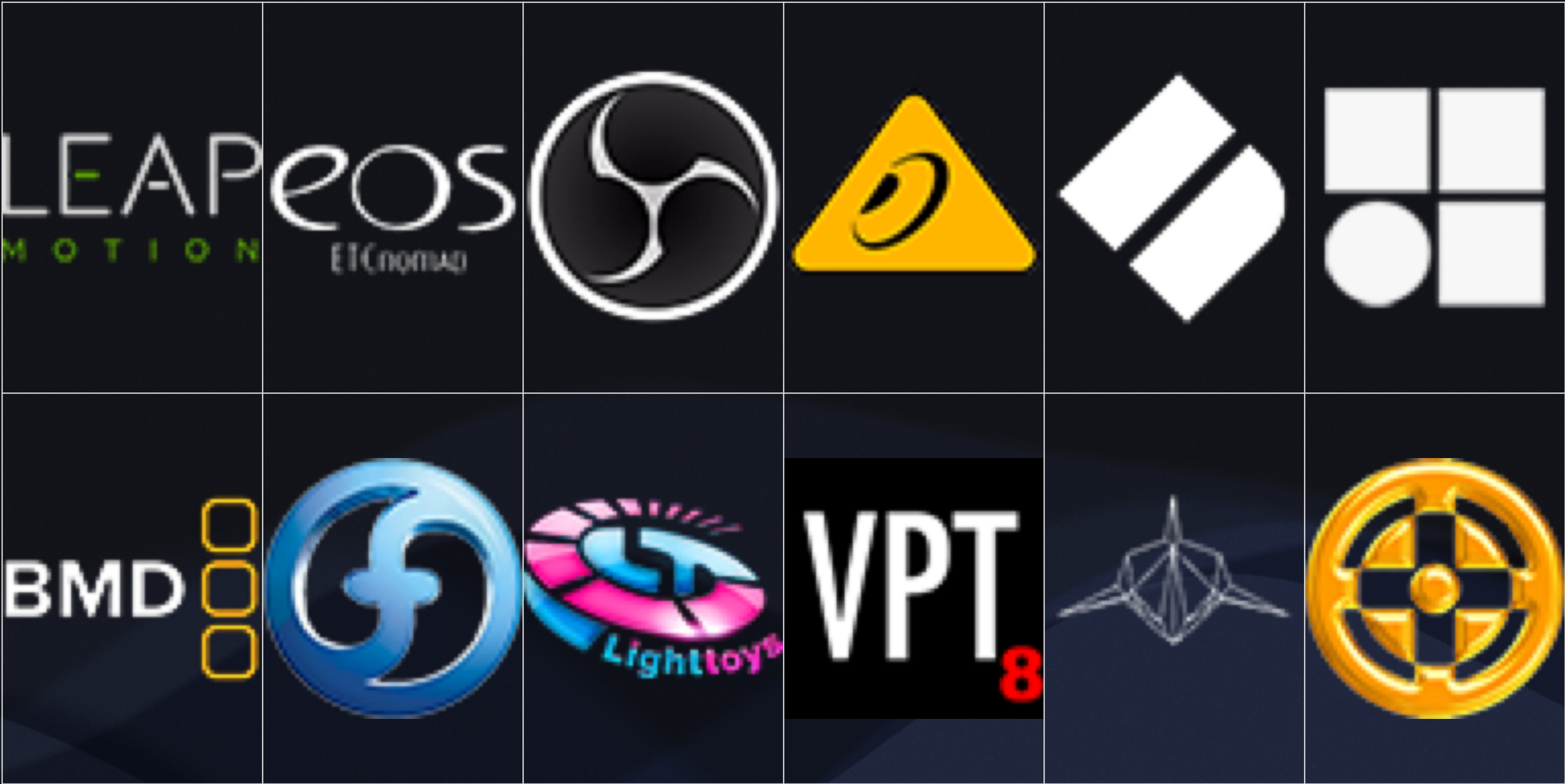
Supported protocols

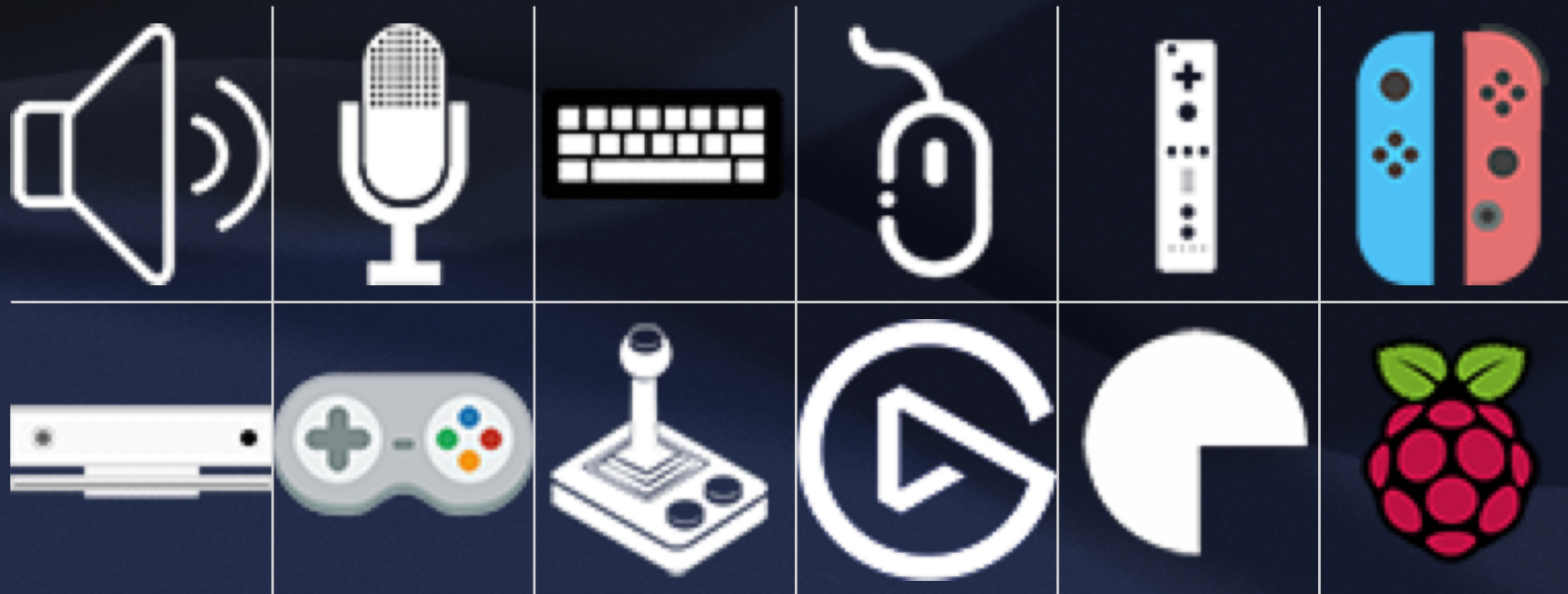
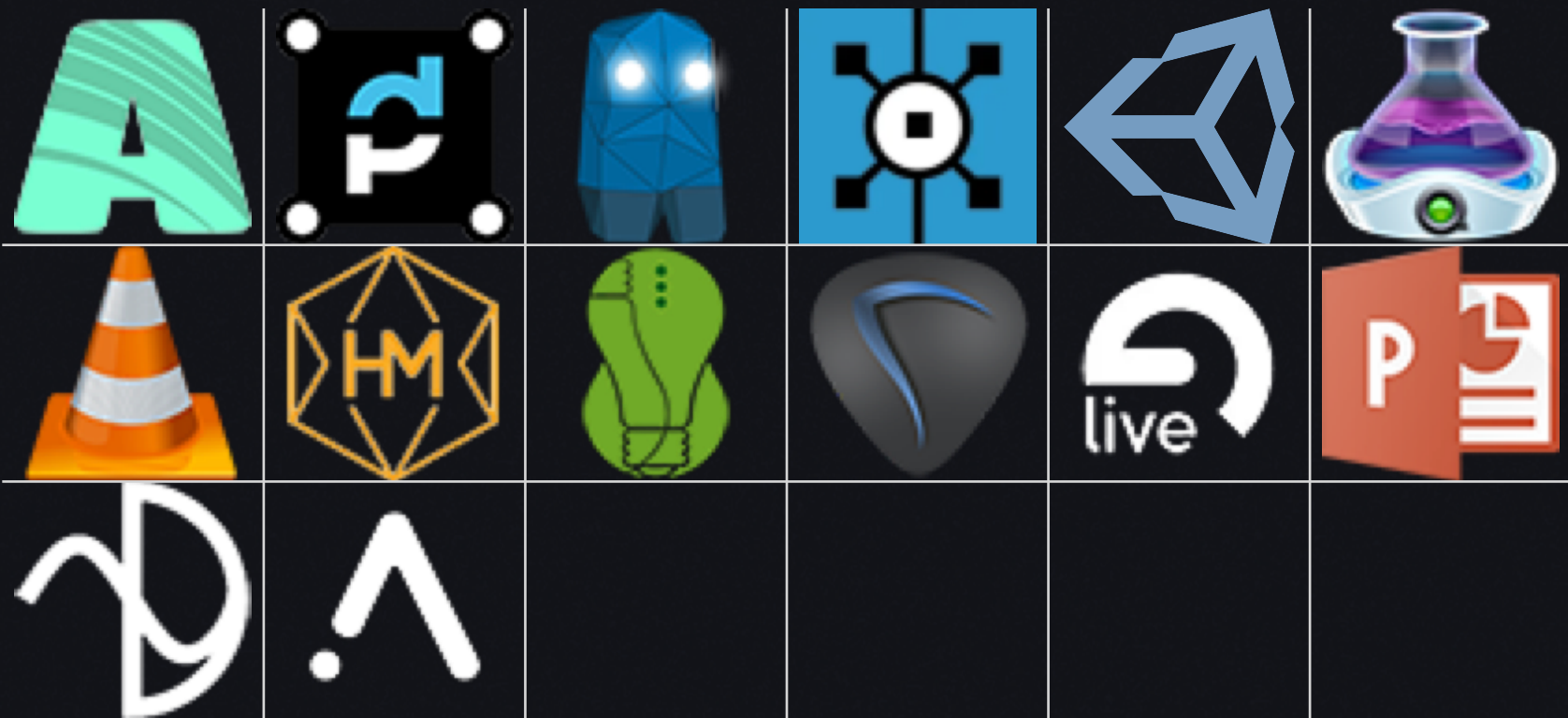
Supported hardware



Community modules



Why is it the rosetta stone?



Chataigne

Welcome to the new new.

- Map controls to each other, with simple (or complex) scaling
- Run sequences with events and protocols embedded
- Create branching states for complex flows

Why is it the rosetta stone?

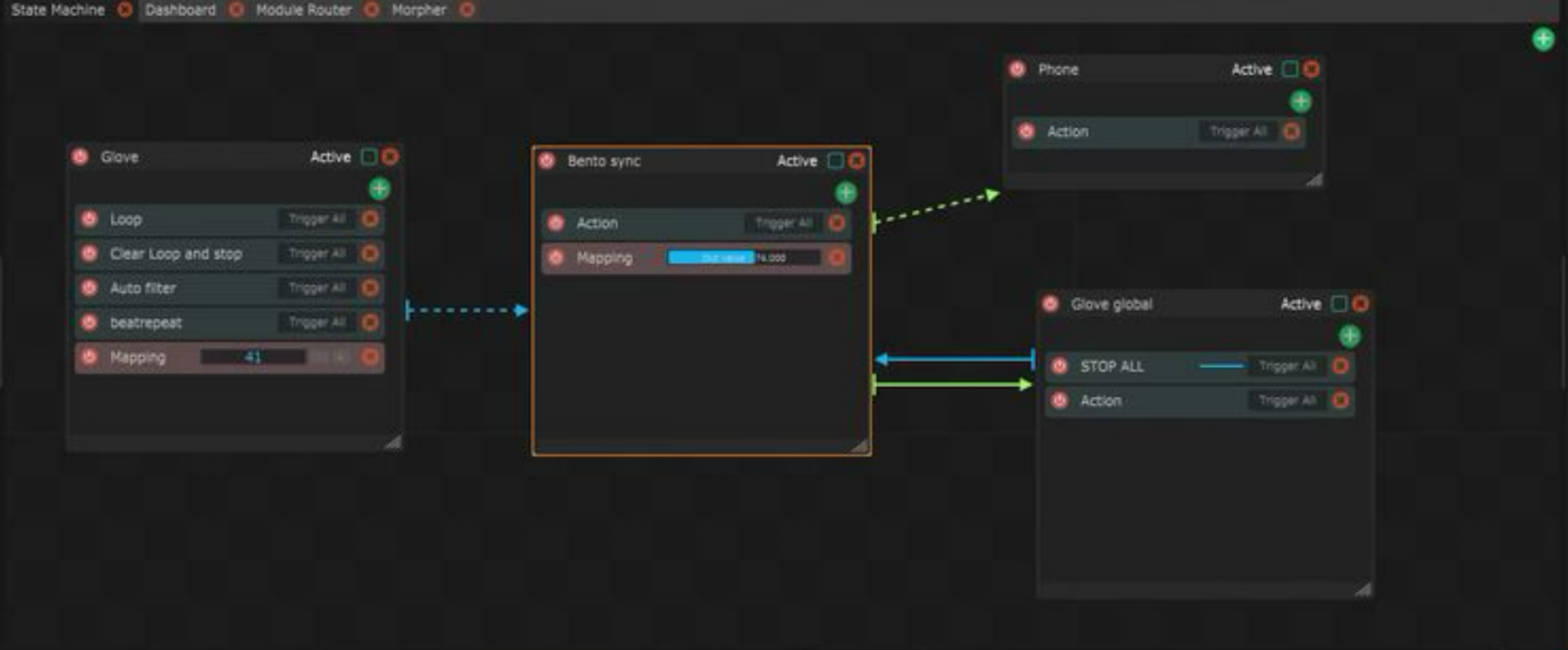
- Audio levels control the color of a light?
- Hand positioning controlling a synth parameter?
- A Wii-mote controlling a moving light?
- Display Ableton live tempos on a screen onstage?
- Move an object in 3d audio space with your phone?

Modules

- Unity
- Sound Card
- Resume
- BenTo
- OSC
- MIDI Glove
- MIDI Live

Custom Variables

You can manage you own variables by first creating a group here.



Inspector

Bento sync

Active

Processors

- Action
- Mapping

Input

Input Value: MIDI Glove:[11] A#3

Filters

- Curve Map

Outputs

Out value: 74.000

Sequences

- Main Sequence
- Intro 2
- Sequence 2
- Sequence 3
- Sequence 4

Sequence Editor

00:00:35.031

Particle 2 Emission

Video

Sax

Action

Audio

New Color Layer

Particle Emission

Help

Logger

Warnings

Time	Source	Content
10:07:08.359	modulefactory	Found custom module : Lighttoys:Lighttoys FT
10:07:08.362	modulefactory	Found custom module : Hardware:Makey
10:07:08.365	modulefactory	Found custom module : Special:Hamagabe
10:07:08.368	modulefactory	Found custom module : Hardware:Phantom
10:07:08.372	modulefactory	Found custom module : Hardware:Specktr
10:07:08.376	modulefactory	Found custom module : Bitcraze:TDoA Sniffer
10:07:12.991	Zeroconf	New OSC service discovered : Chatagne - Remote Control on BenPortable.local, 127.0.0.1:12000
10:07:20.358	enginefiledocument	your original file has been copied to D:\Documents\Pro\Projects\Augmented Nigo\Delic...
10:07:20.364	OSC Output	Now sending to 127.0.0.1:13000
10:07:21.127	OSC Output	Now sending to 127.0.0.1:7000
10:07:21.128	OSC Output	Now sending to 127.0.0.1:43000
10:07:21.129	OSC Output	Now sending to 127.0.0.1:9000
10:07:21.129	OSC	Now receiving on port : 12000
10:07:21.136	OSC	Local IPs:
		> 127.0.0.1
		> 169.254.175.88
		> 169.254.192.87
		> 169.254.242.163
		> 169.254.85.30
		> 192.168.199.1
		> 192.168.245.1
		> 192.168.43.17
		> 2.0.0.2
		> 224.0.0.1
		> 224.0.0.251
		> 224.0.0.252
		> 239.255.255.250
10:07:21.142	mididevice	MIDI In Witibud opened
10:07:21.146	mididevice	MIDI Out loopMIDI Port opened
10:07:21.217	Engine	Session loaded in 0.861s
10:07:21.763	OSC	Zeroconf service created : OSC:12000
10:07:22.989	Zeroconf	New OSC service discovered : Chatagne - OSC on BenPortable.local, 127.0.0.1:12000

Clear Copy All to Clipboard

THANKS!

- USITT Sound Commission - I mean how cool is this place!
- The SoundLab gang (AKA the four horsepeople of the apocalypse)
- John Huntington (buy his books!!)
- Ronda, for obvious reasons

Want a copy?
(with links)

