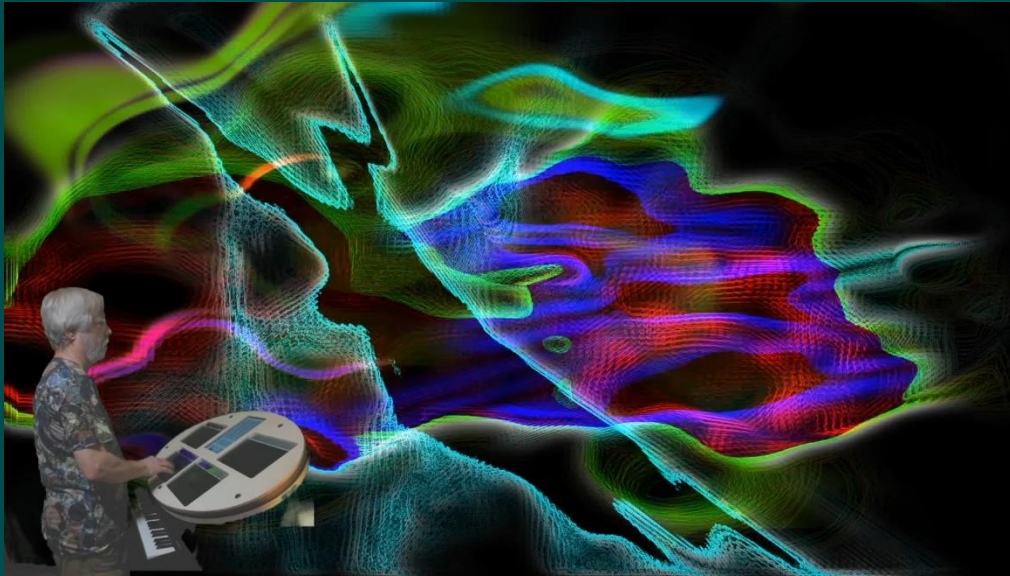


# Space Palette Pro

A Visual Music Instrument



Tim Thompson <https://timthompson.com> [me@timthompson.com](mailto:me@timthompson.com)

# Space Palette Pro

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- History
- Implementation
- Workflow
- Performance

# History – Fingerworks-based Controller

- Capacitive multitouch with finger area detection
- Extremely responsive, excellent driver support
- First exposure to 3D input



# History - Finger Painting with Planets

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- Maker Faire 2008



# History - LoopyCam

- Camera-based visual performance instrument
- Performer controls camera position and effects with a single integrated device
- Security cameras auto-adjust to low light situations.

Version 1

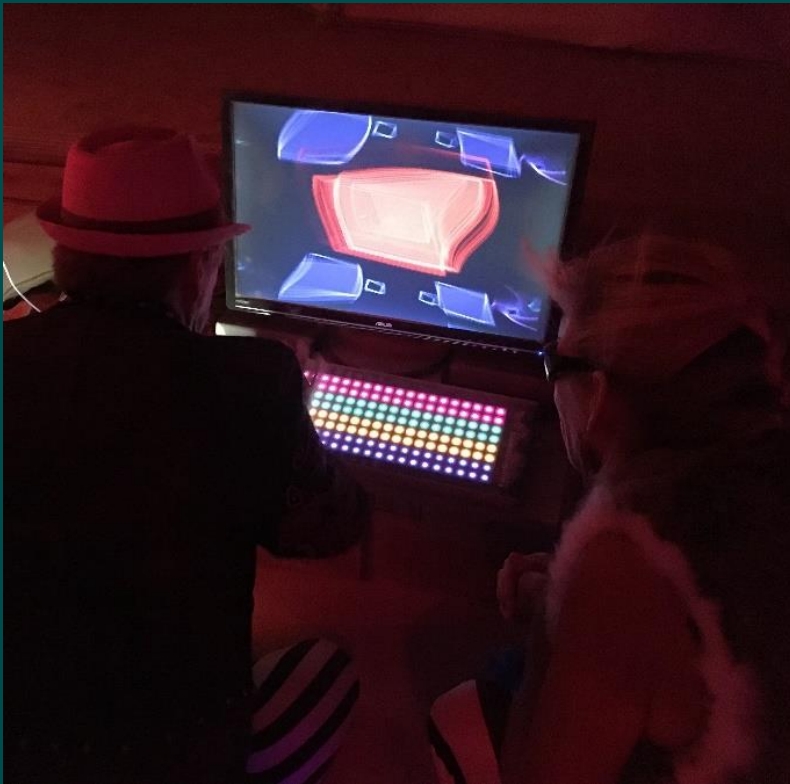


Version 2



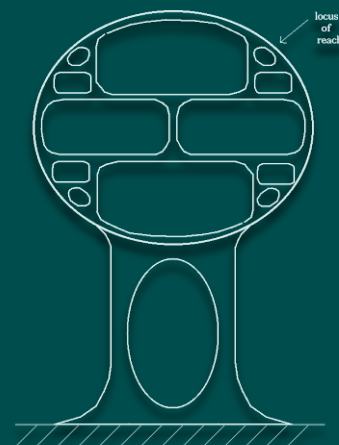
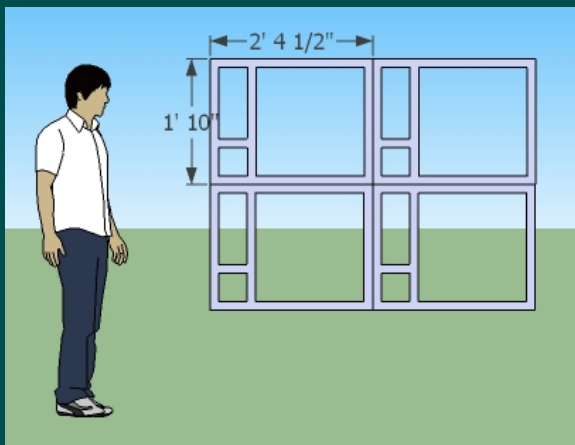
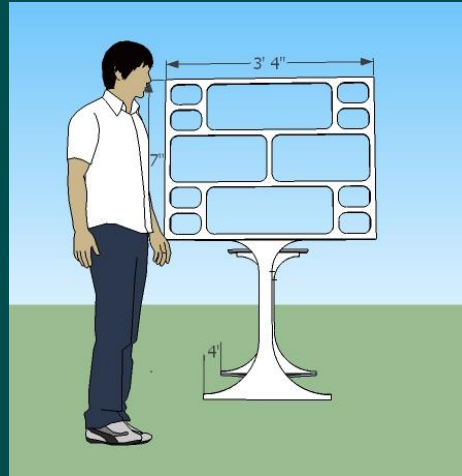
# History - UniLooper

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- LinnStrument for input
- 4-track MIDI looper
- Loops trigger visual shapes
- Implemented with KeyKit
- Looping Festival in 2015
- Burning Man in 2016

# History - Space Palette Prototypes

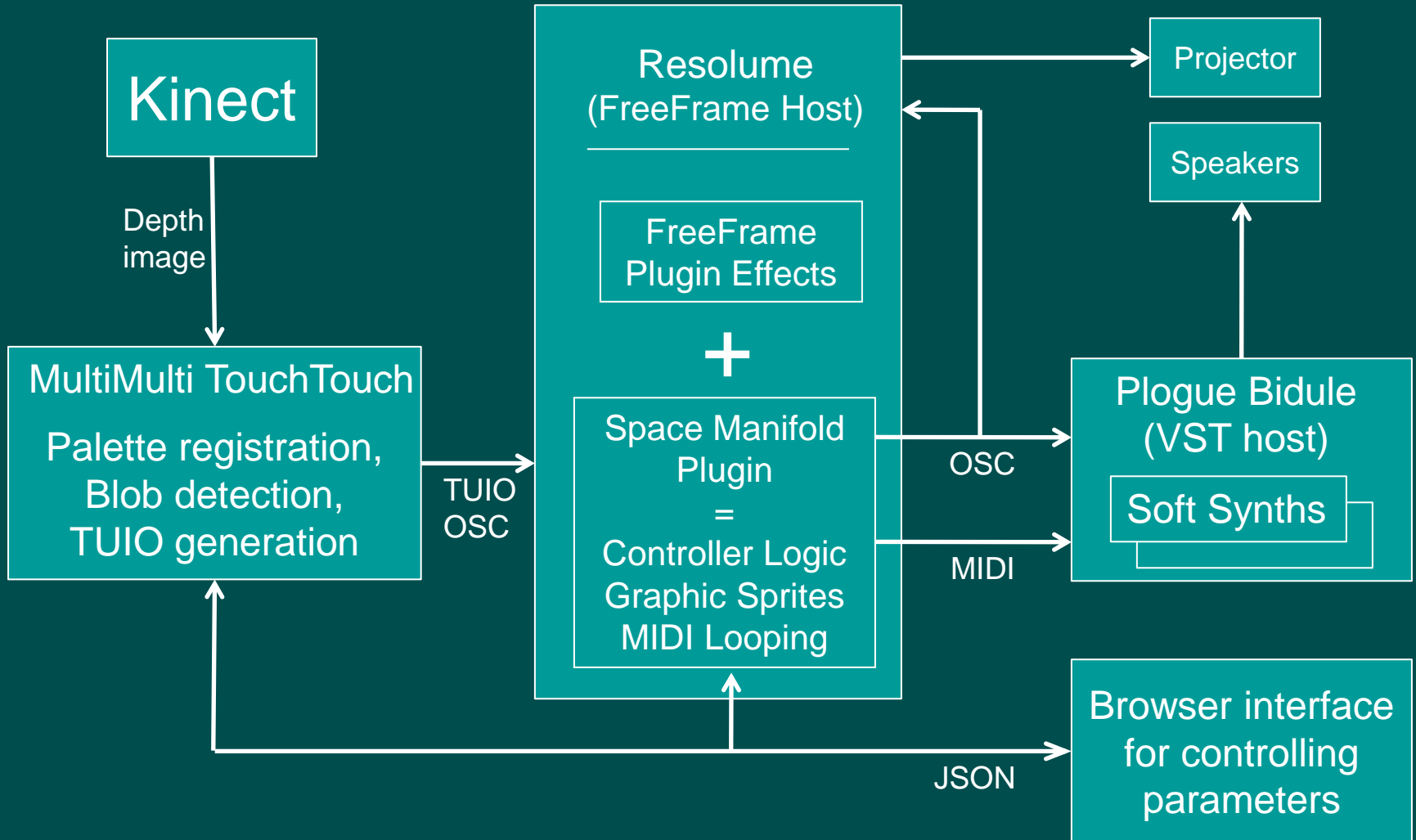


# Space Palette - Festival Appearances



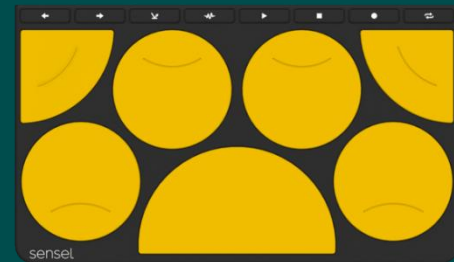
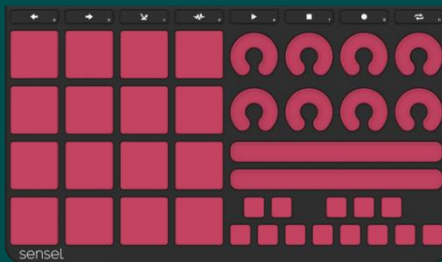


# Space Palette Design - 2012



# Sensel Morph - a dream come true for 3D input

- 20,000 force-sensing resistors, detects 5g to 5kg
- Raw data is easily obtained
- Overlays for different control layouts



- Magnets in overlays allow detection and swapping
- No overlay == blank canvas

# Space Palette Pro

- Differences from Space Palette:
  - Sensel Morphs and a touchscreen
  - Pressure rather than depth
  - Five 3D cursors per hand
  - Separate visual layers, greater variety

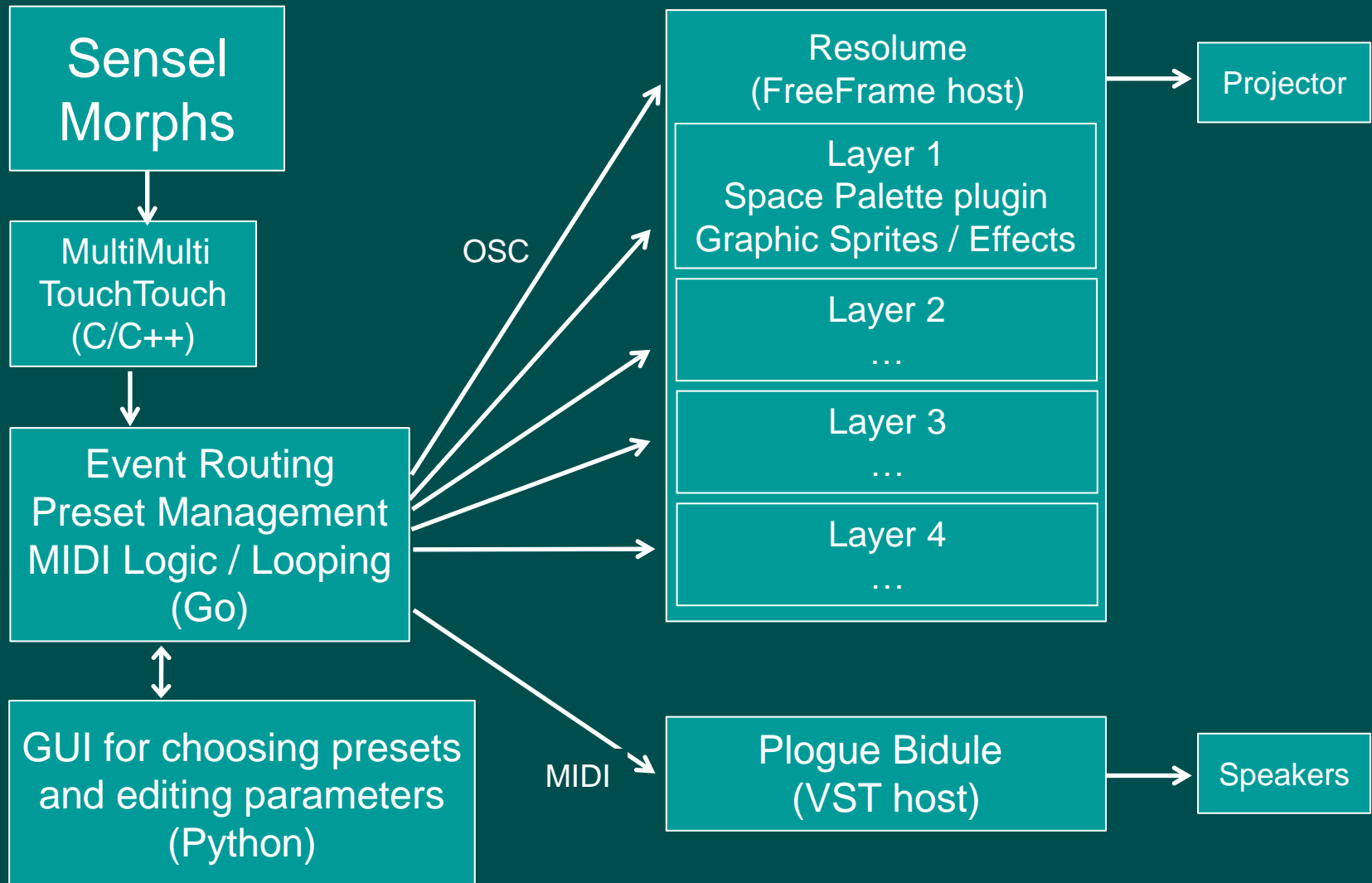


# Space Palette Pro - Overview

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- Each of the 4 Morphs has independent control of:
  - Gesture looping; gestures generate both MIDI and graphics
  - Visual effects applied to graphics within Resolume
  - Sounds (Omnisphere 2)
- Python-based GUI for preset selection and editing
- Go-based router
  - Handles all input - TUIO, MIDI, APIs
  - Generates MIDI output
  - Realtime looping of gestures
  - APIs for parameter and preset control (used by GUI)

# Space Palette Pro - Design



# Space Palette Pro - GUI

## Casual

**Presets**

|                  |                |                 |                  |
|------------------|----------------|-----------------|------------------|
| All Drums        | Basic Chaos    | Bellsy Bells    | Bold Strokes     |
| Complex Kaleid   | Deep Triangles | Dream Puddles   | Drifting Borders |
| Dusty Pools      | Edgy Kaleid    | Endless Colors  | Explosive Shapes |
| Full Bodied      | Ghost Puddles  | Line Dance      | Organic Growth   |
| Perky Trails     | Plucky Stuff   | Shape Shards    | Simple Organism: |
| Smooth Breathing | Smooth Dust    | Spiro Graphical | Too Square       |

**Actions**

|               |                |           |             |
|---------------|----------------|-----------|-------------|
| Looping OFF   | Length 8 Beats | Fast Fade | Clear Loops |
| Default Scale |                |           | Reset All   |

## Performing

Space Palette Pro

Monitor  MidiScale  Midipassthru  Midisplit

Preset: < 000\_Guitars > Save Send

Effects: < Smooth\_Dust >

Chan: 1 Port: < >

ANO Slower Faster Reset

Transpose: Next Prev Reset

Clear All Fade All Loop All Loop Non

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**AreaA**

S: Smooth\_Dust\_1 Edit

V: Smooth\_Dust\_1 Edit

L: Record Play Fade Clr

Leng: 4b Fade: Fast Rpts: Inf



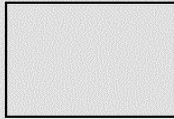
**AreaD**

S: Smooth\_Dust\_4 Edit

V: Smooth\_Dust\_4 Edit

L: Record Play Fade Clr

Leng: 4b Fade: Fast Rpts: Inf



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**AreaB**

S: Smooth\_Dust\_2 Edit

V: Smooth\_Dust\_2 Edit

L: Record Play Fade Clr

Leng: 4b Fade: Fast Rpts: Inf




**AreaC**

S: Smooth\_Dust\_3 Edit

V: Smooth\_Dust\_3 Edit

L: Record Play Fade Clr

Leng: 4b Fade: Fast Rpts: Inf



# Space Palette Pro – Performing GUI (take 3)

**Preset**

|                        |                       |                     |                   |
|------------------------|-----------------------|---------------------|-------------------|
| African Borders        | African Modern        | Amoebic Drips       | Amoebic Growth    |
| Another Kaleidoscope   | AquaBell Elevations   | Basic Shapes        | Bending SpaceTime |
| Blobby Borders         | Blobby Pop            | Blurry Kaleidoscope | BubblesOf Bliss   |
| Burn Barrels           | Candied Blobs         | Circular SpiderWebs | Cloud Flowers     |
| Cloudy Circles         | Dirty Virus           | Drum Fragments      | Fireful Foursome  |
| Floating GuitarSquares | FourSided Flowers     | Fractured Squares   | Glowing Lava      |
| Guitar Flowers         | Horizontal Percussion | Kaleidic Space      | Lava Blobs        |
| Mirrored Mania         | Pastel Lozenges       | Percussive Purple   | Ruptured Terrain  |
| Scatalogical Chaos     | SeaOf SodaStraws      | Simply Circles      | Smooth Fractures  |
| Softest Circles        | Synth Blobs           | Synth Symphony      | Traffic Jam       |
| Trembling              | Universe              | Voracious           | WhiteBorders      |

**Perform**

|                |                     |                |            |             |           |
|----------------|---------------------|----------------|------------|-------------|-----------|
| Looping is OFF | Loop Length 8 beats | Loop Fade Fast | Loop Clear | Transpose 0 | Reset All |
|----------------|---------------------|----------------|------------|-------------|-----------|

\*

**Preset** Snapshot Sound **Visual** Effect Sliders

**Save**

|                |         |    |   |   |   |   |    |
|----------------|---------|----|---|---|---|---|----|
| alphafinal     | 0.000   | << | < | . | . | > | >> |
| alphainitial   | 1.000   | << | < | . | . | > | >> |
| alphatime      | 2.289   | << | < | . | . | > | >> |
| aspect         | 1.000   | << | < | . | . | > | >> |
| bounce         | false   | << | < | . | . | > | >> |
| cursorsprites  | true    | << | < | . | . | > | >> |
| filled         | true    | << | < | . | . | > | >> |
| huefillfinal   | 0.000   | << | < | . | . | > | >> |
| huefillinitial | 288.000 | << | < | . | . | > | >> |
| huefilltime    | 5.000   | << | < | . | . | > | >> |
| huefinal       | 252.000 | << | < | . | . | > | >> |
| hueinitial     | 252.000 | << | < | . | . | > | >> |
| huetime        | 2.003   | << | < | . | . | > | >> |
| lifetime       | 6.000   | << | < | . | . | > | >> |
| luminance      | 0.500   | << | < | . | . | > | >> |

**Perform** Main Sliders1 Sliders2 Sliders3

|                |                     |                |              |             |                      |
|----------------|---------------------|----------------|--------------|-------------|----------------------|
| Looping is OFF | Loop Length 8 beats | Loop Fade Fast | Loop Clear   | Transpose 0 | Reset All            |
| Fret Quantize  | Pressure Vol        | Newage Scale   | Tempo Normal |             | Recording & Playback |

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# Space Palette Pro - Burning Man 2019

- Photon Salon



- PlayAlchemist Grand Pyramid



[Movie](#)



# Future Direction Possibilities

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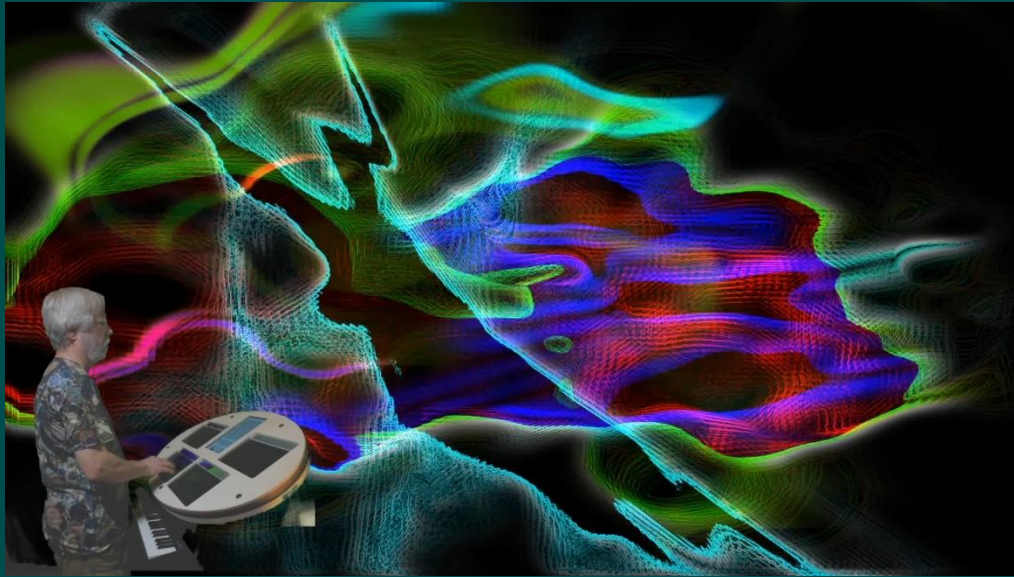
- ISF (Interactive Shader Format) instead of FreeFrame
- Graphics generation in Go
  - Use Spout to send to Resolume (or other visual host)
- More interesting finger painting behaviour
  - Two-handed control
  - Pressure semantics
- More interesting musical behavior
  - Phrases rather than notes
  - Scanning sequences

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# Workflow Demo and Performance

# Space Palette Pro

A Visual Music Instrument



These slides can be found at [timthompson.com/talks](https://timthompson.com/talks)

Tim Thompson <https://timthompson.com> [me@timthompson.com](mailto:me@timthompson.com)