

Sketching for Wellness Entertainment and Rehabilitation

Yoichi Nagashima (SUAC/ASL)

Sketching for Wellness Entertainment and Rehabilitation

This is my 6th Sketching !

2008 Providence

2009 London

2012 Portland

2013 Paro Alto

2015 Arizona

2019 Detroit

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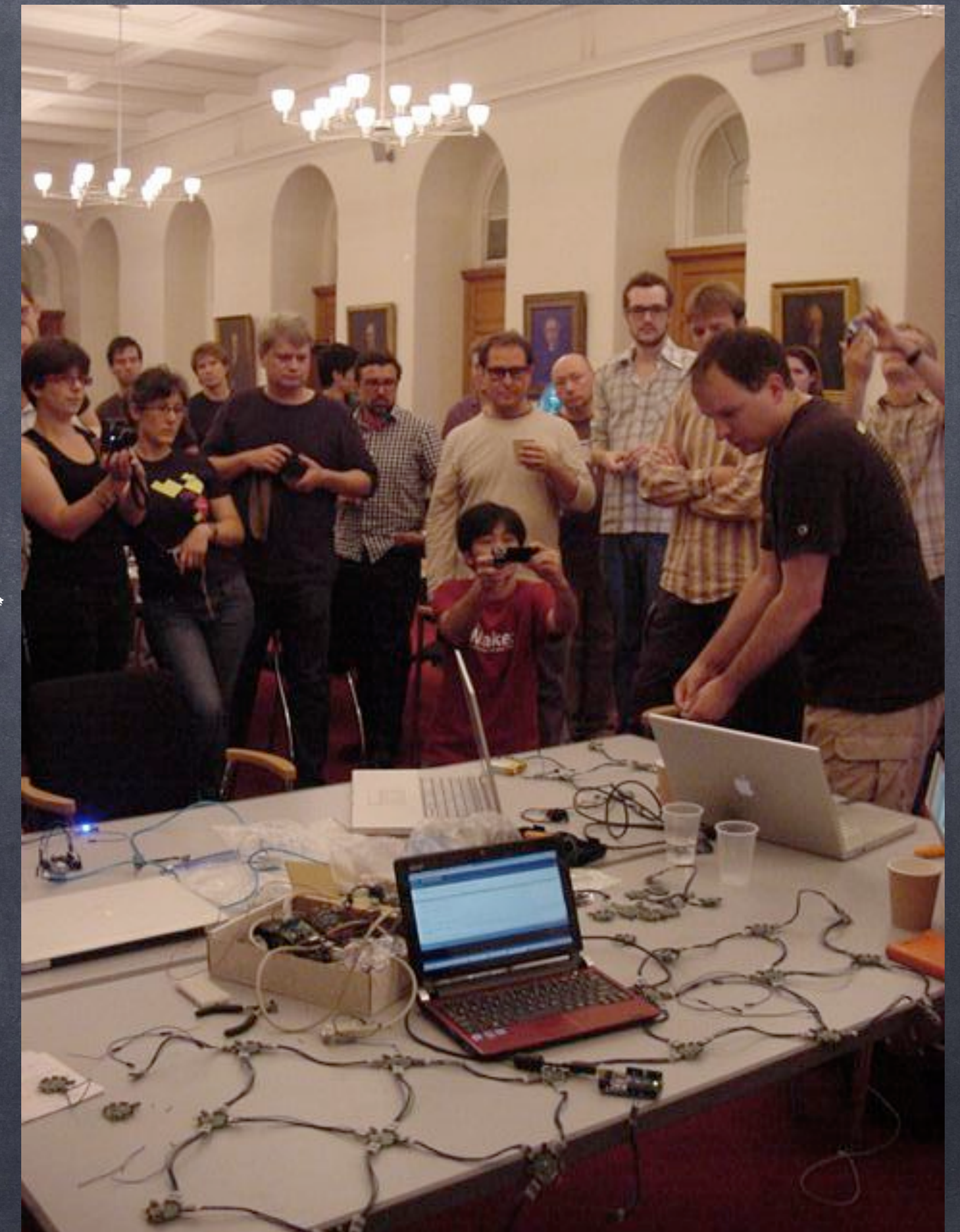
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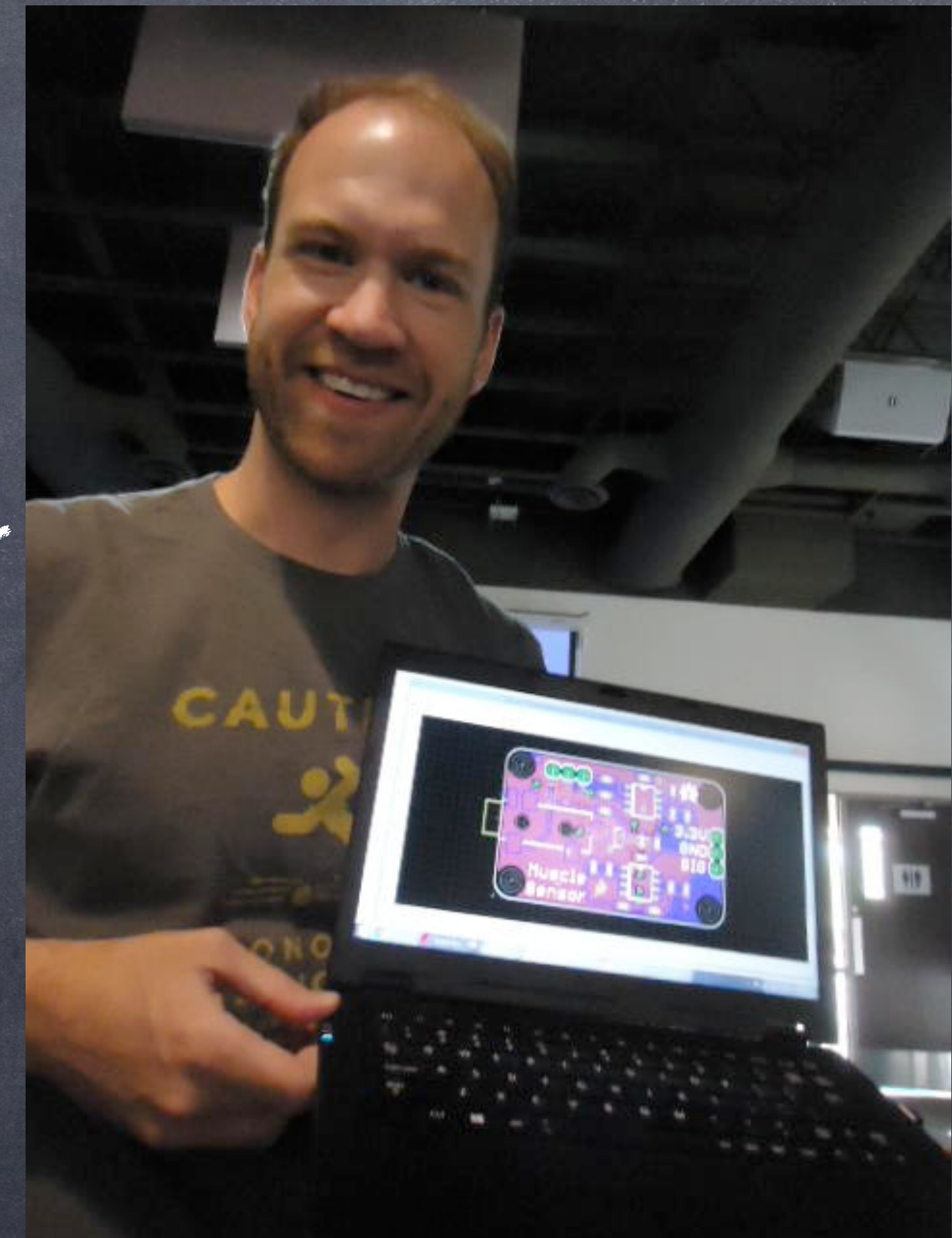
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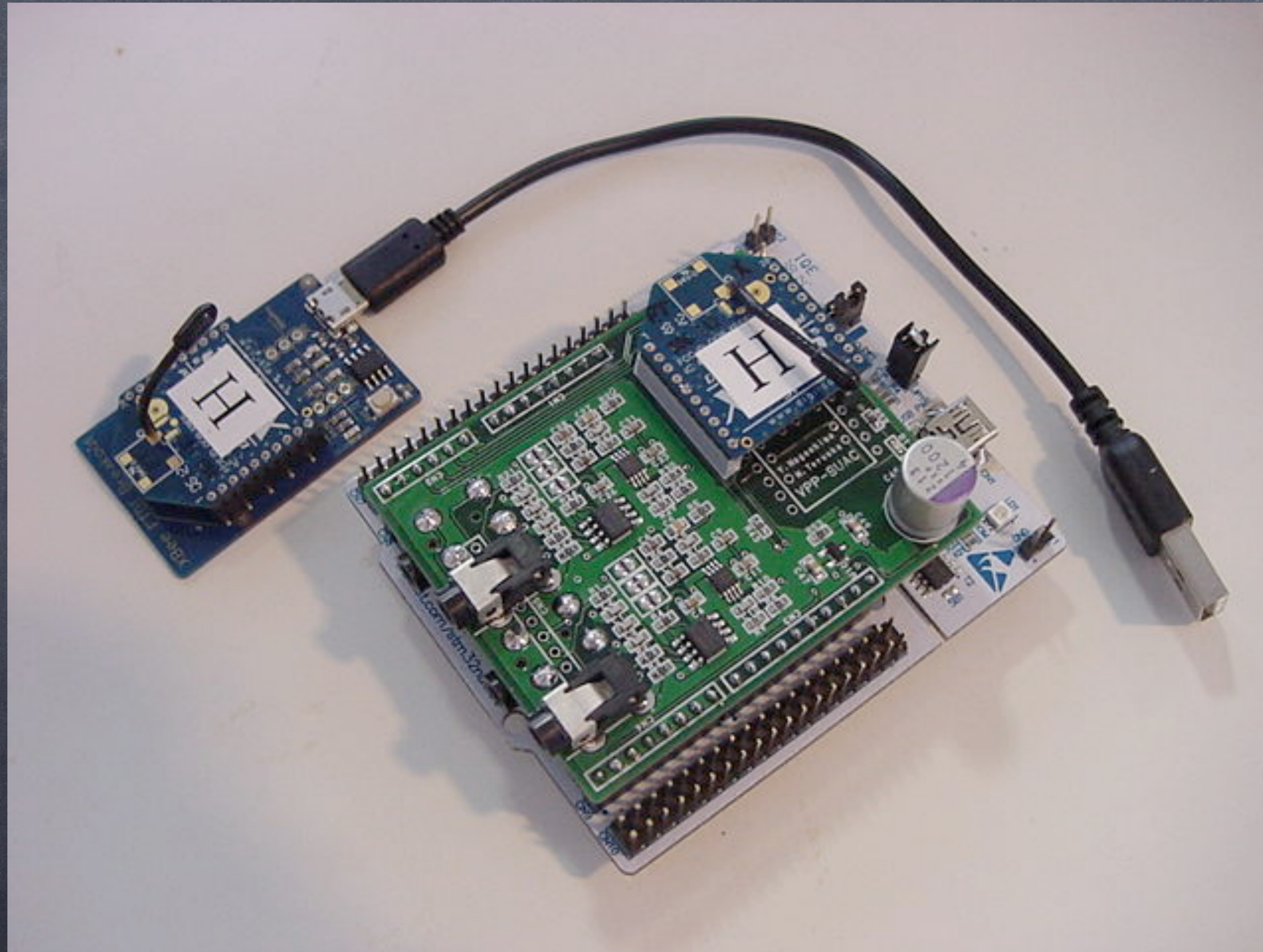


Sketching for Wellness Entertainment and Rehabilitation

My research in the last few years aims the welfare field using bio-sensing and tactile/rubbing sensor.

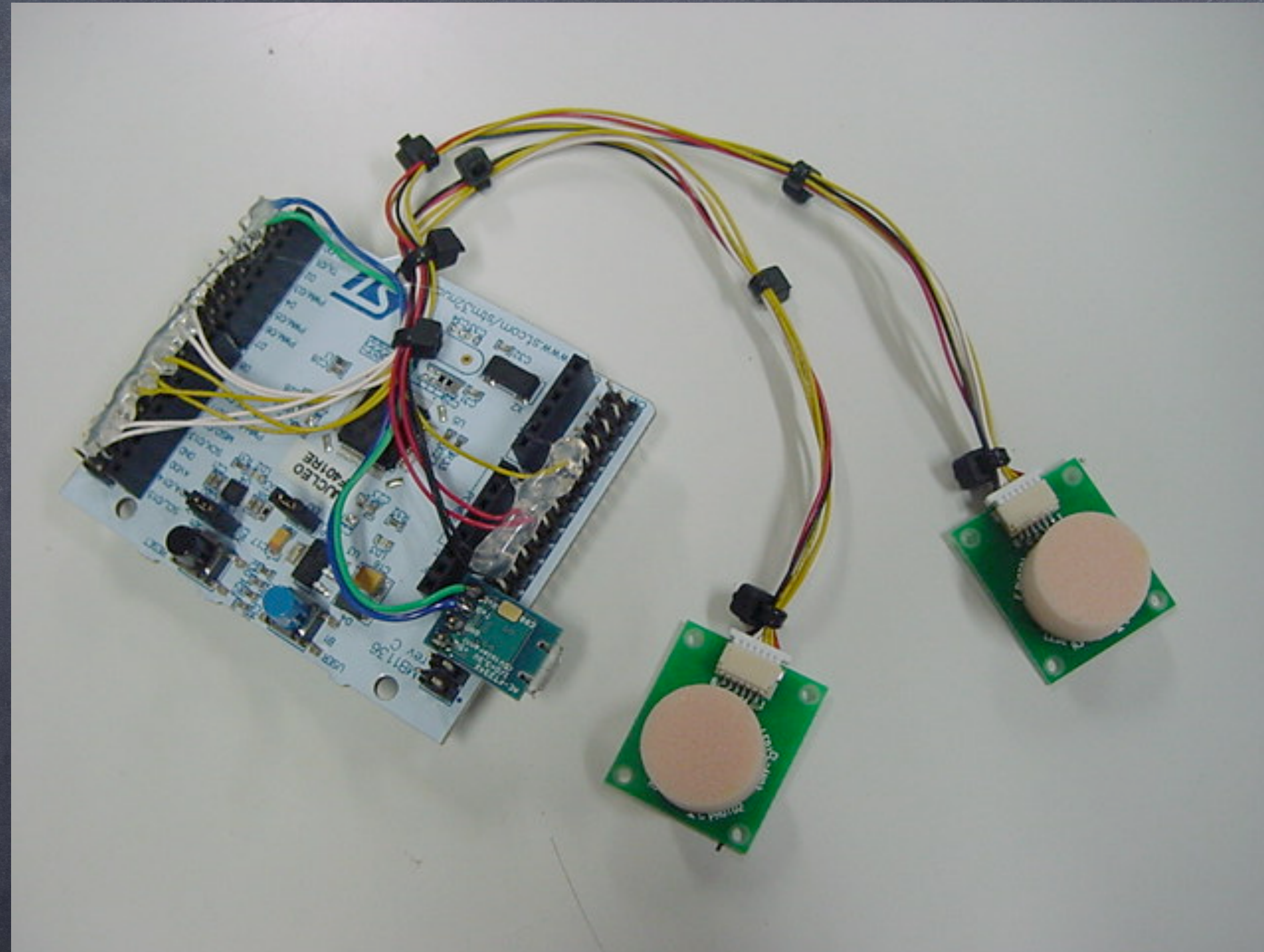
Sketching for Wellness Entertainment and Rehabilitation

New EMG sensor "VPP-SUAC"



Sketching for Wellness Entertainment and Rehabilitation

Tactile/Rubbing sensor "PAW-double"

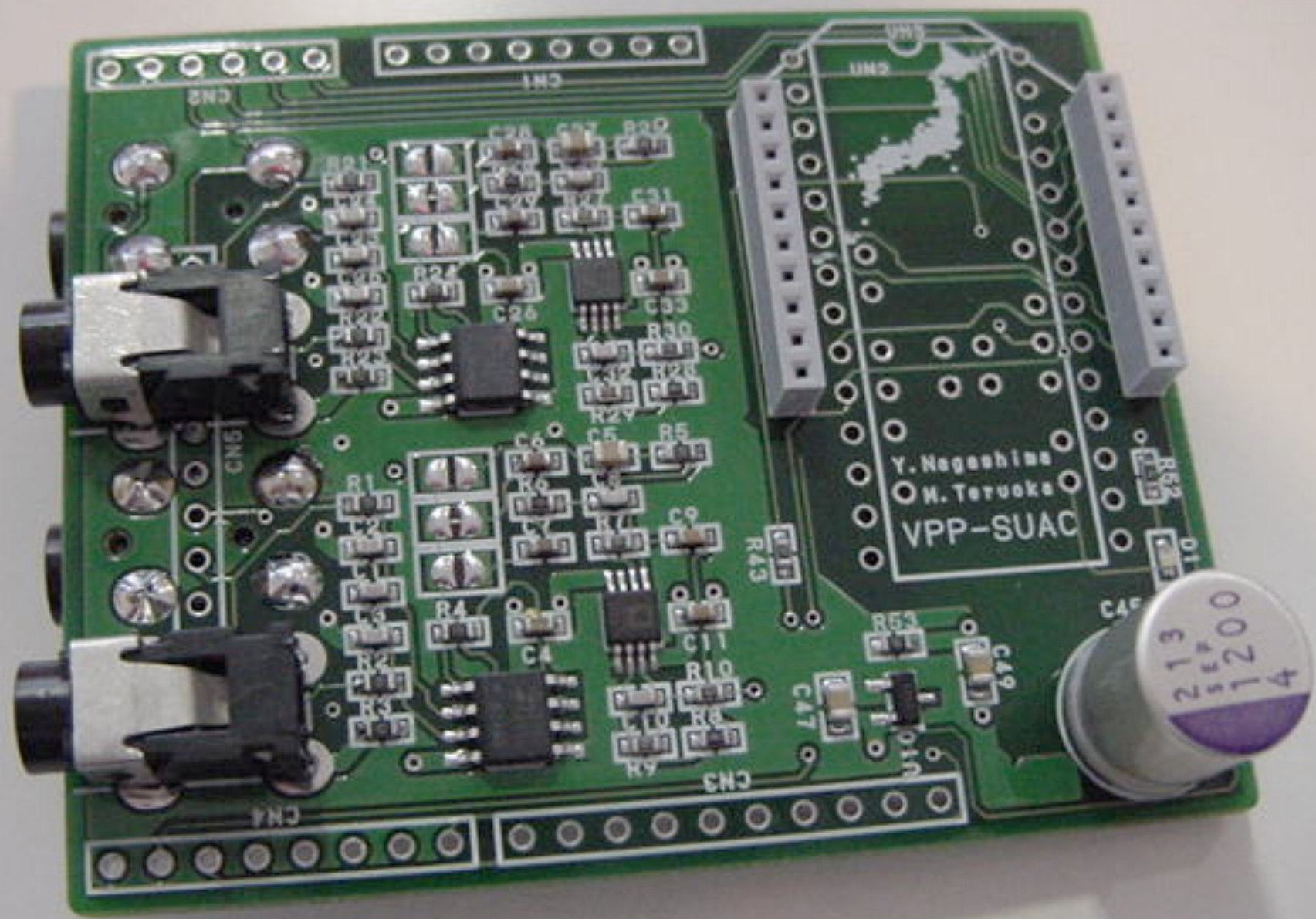


Keywords :

- Biofeedback
- Interoception
- Serious Game

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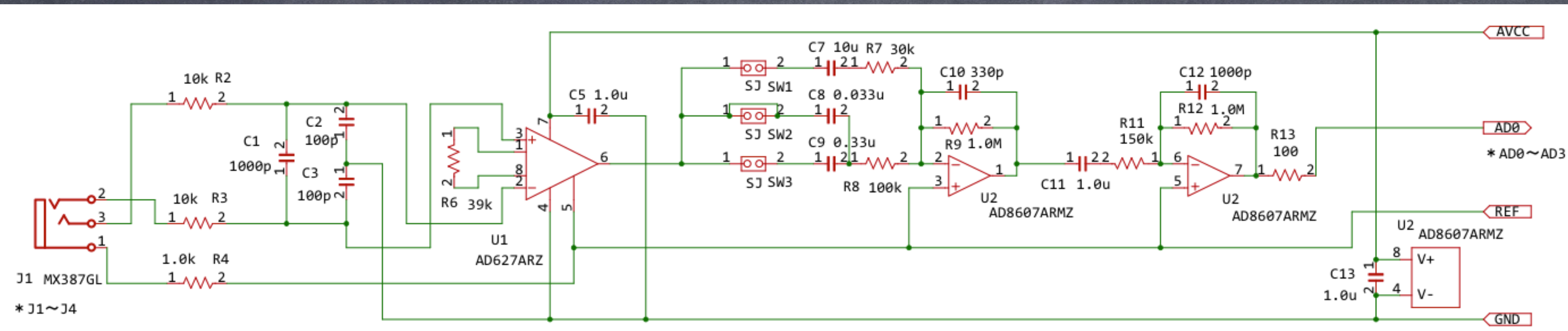
New EMG sensor "VPP-SUAC"



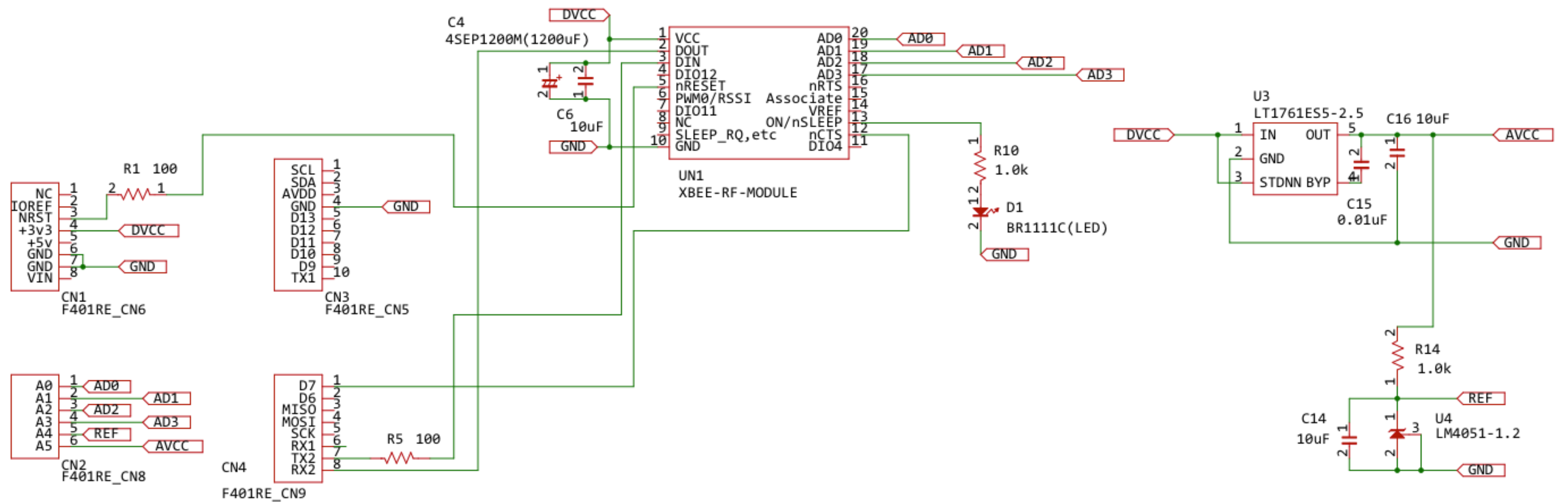
4-channel EMG sensors
EMG/fast/ECG option jumper
Xbee WiFi interface
Arduino shield compatible
mbed NucleoF401RE

Sketching for Wellness Entertainment and Rehabilitation

New EMG sensor "VPP-SUAC"

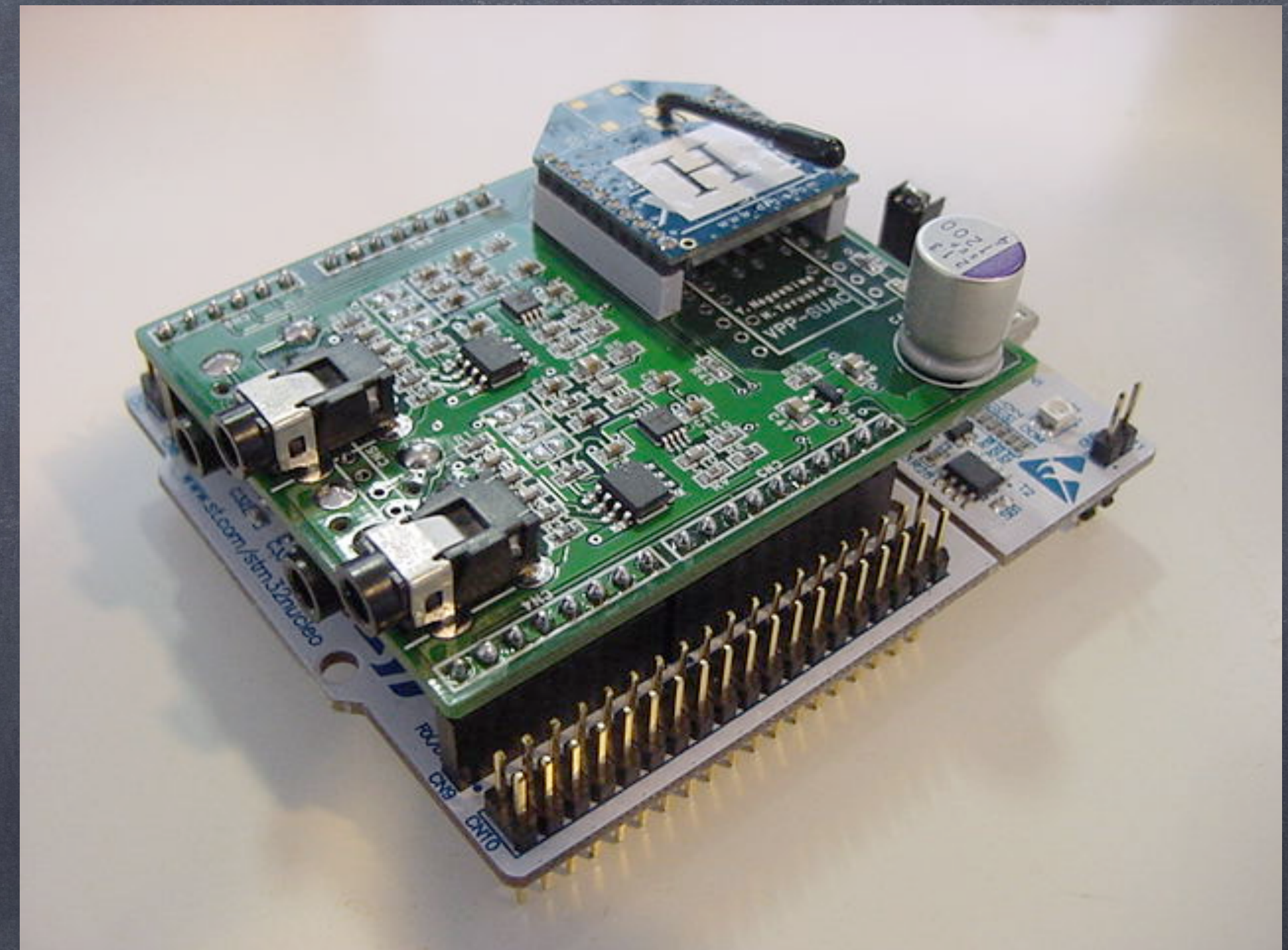
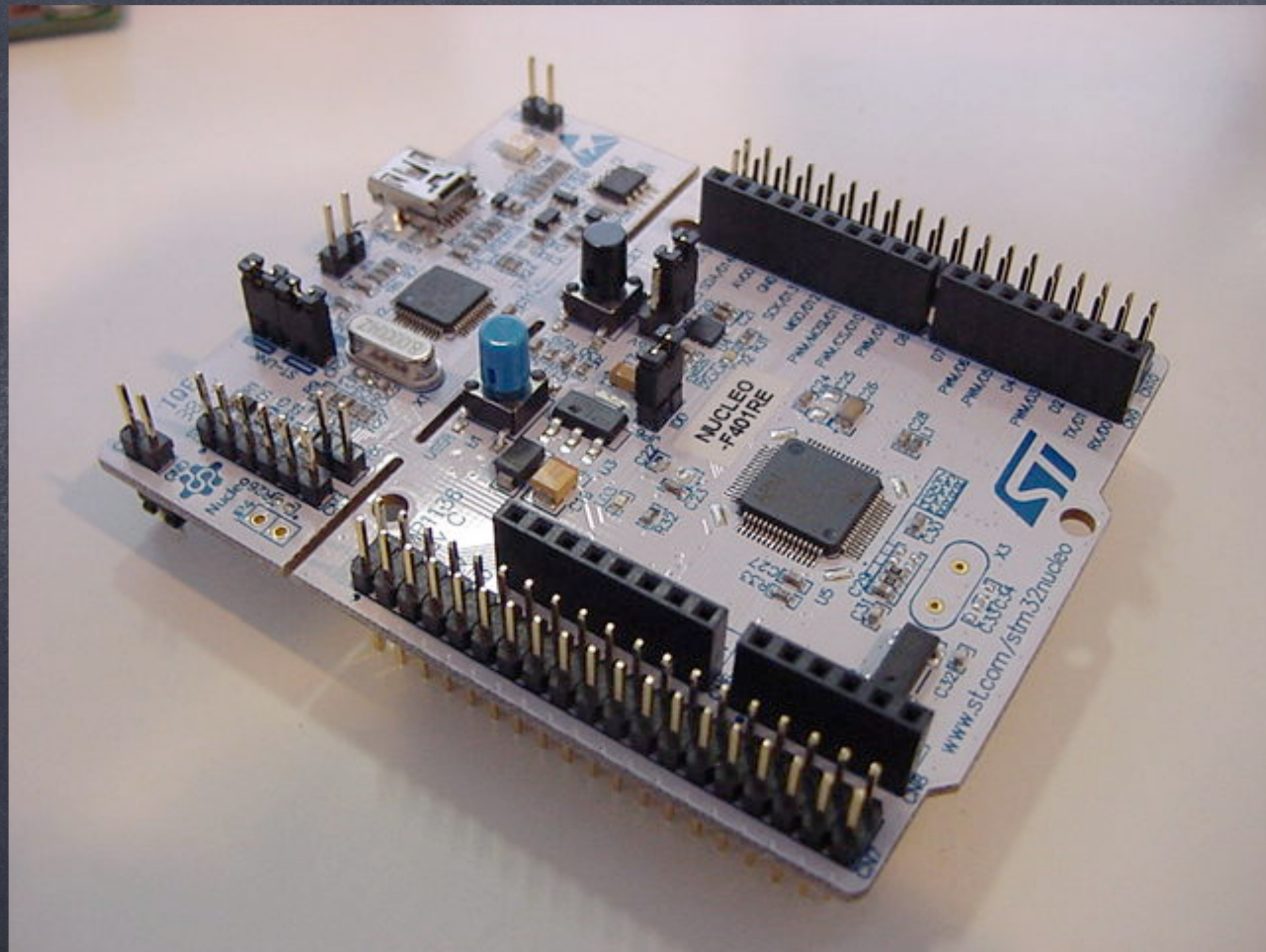


同様の回路×4



Sketching for Wellness Entertainment and Rehabilitation

New EMG sensor "VPP-SUAC"



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<http://www.youtube.com/watch?v=9KSSMeBxVZk>

The image shows a YouTube video player with a video thumbnail and a software interface. The video thumbnail, titled "Movie Recording", shows a person's hand held above a desk with a keyboard and a computer mouse. A small Arduino board is visible on the desk. The software interface, titled "VPP-SUAC_04", displays a block diagram of a data processing pipeline. The pipeline starts with a "p arduino0serialreader" block connected to a "p data_divider" block. The "p data_divider" block outputs to four "p mean_10_20_40" blocks. The first "p mean_10_20_40" block shows a black waveform on a white background. The other three "p mean_10_20_40" blocks are empty. The software interface also includes a "p param_set" block with parameters for "Gain" (default = 4), "Mean" (default = 10), and "Notch" (default = 60Hz). The video player interface includes a search bar, a "ログイン" button, and a progress bar at the bottom showing 0:26 / 3:10.

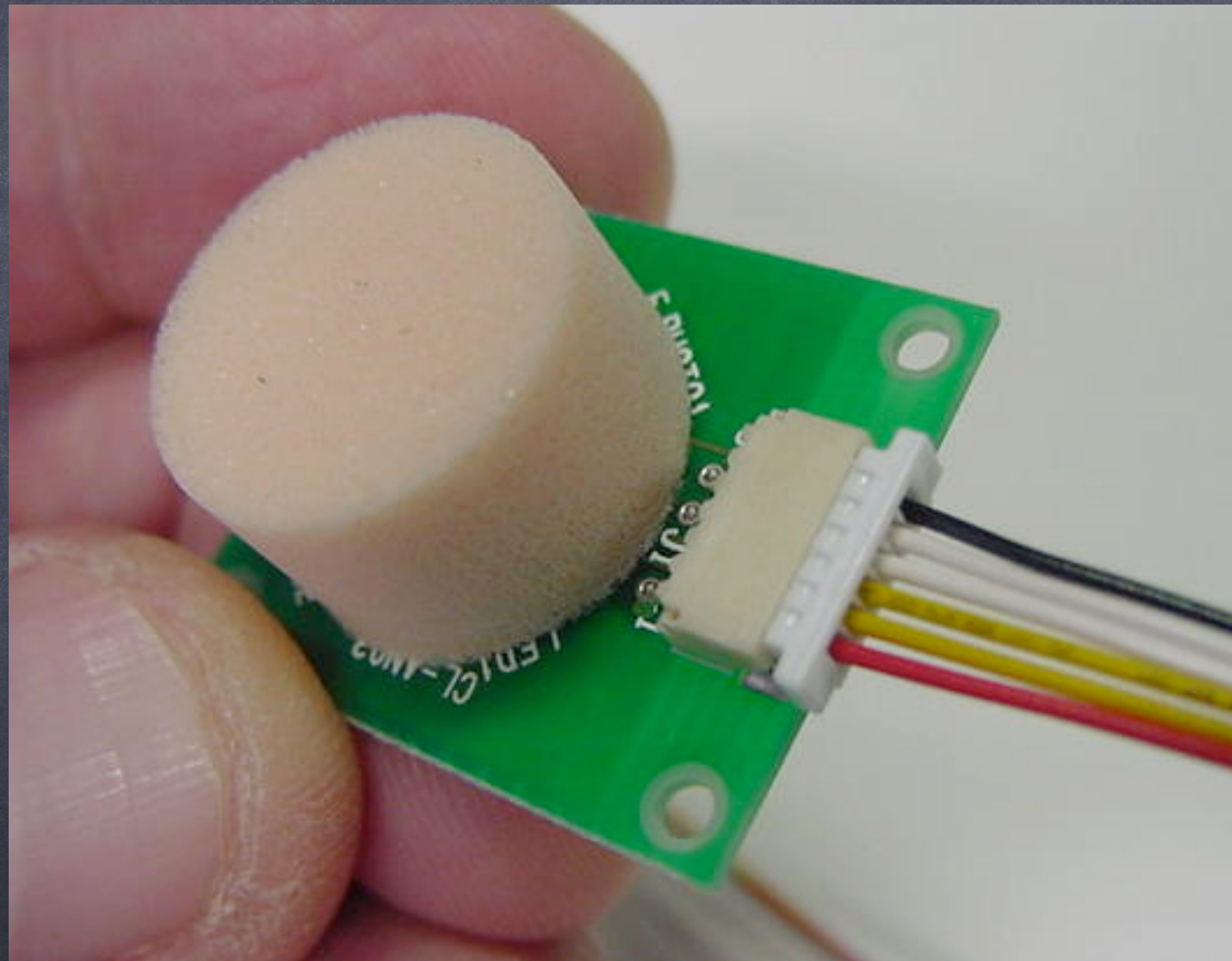
Sketching for Wellness Entertainment and Rehabilitation

Tactile/Rubbing sensor "PAW-sensor"



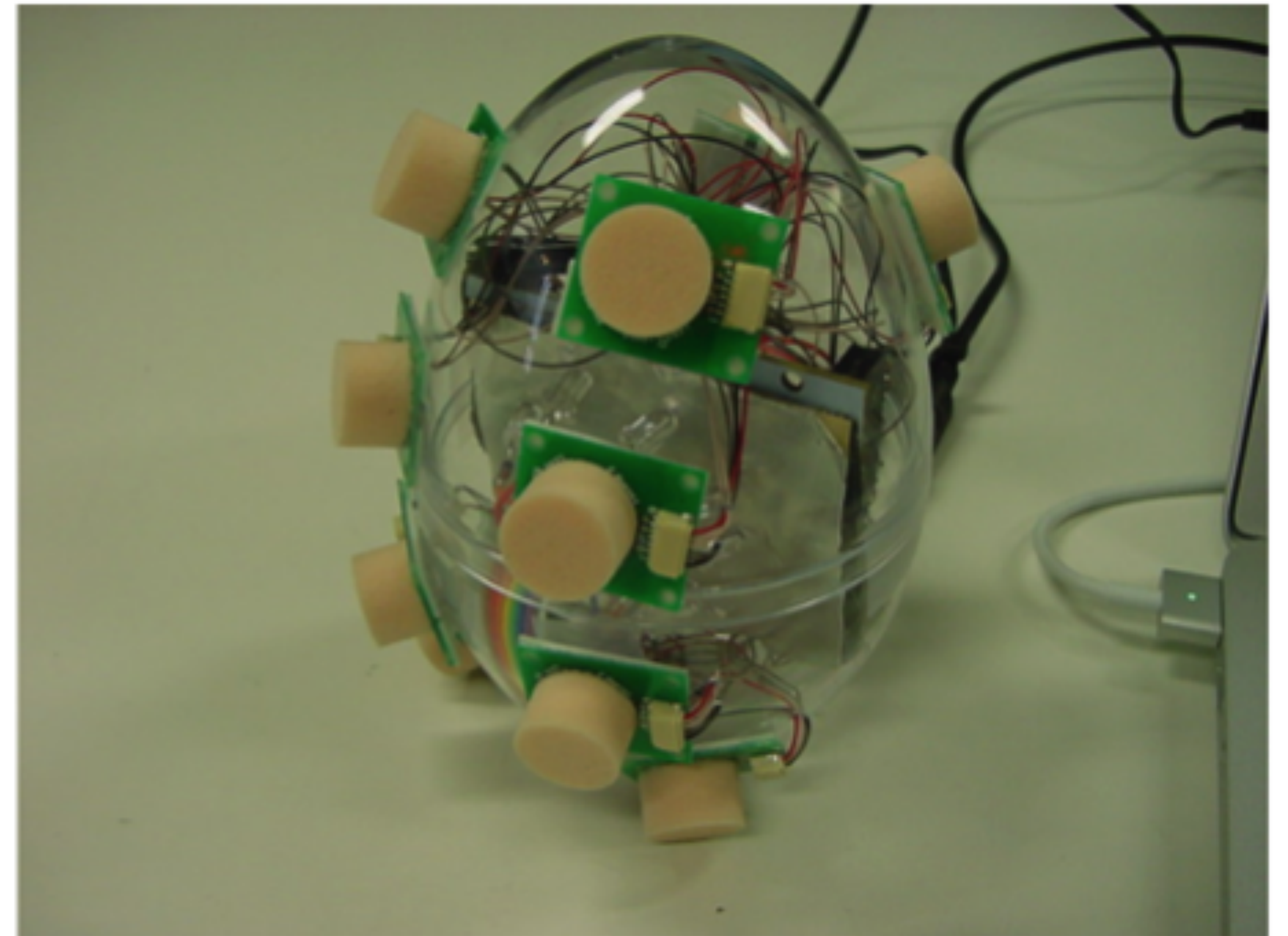
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Tactile/Rubbing sensor "PAW-sensor"



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Tactile/Rubbing sensor "PAW-sensor"



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Tactile/Rubbing sensor "PAW-sensor"

The image displays a Pure Data patch titled "MultiUniUni_09" running on a Mac OS desktop. The patch is designed to process data from a tactile sensor and generate audio and visual feedback.

Visual Feedback (nagasm): A window titled "nagasm" shows a complex, fractal-like pattern of overlapping circles and lines, representing the sensor's output. A "jit.gl.videoplane @transform_reset 2" object is used to render this visualization.

Audio Processing (p LED_mapper, p sound_module): The patch features several audio processing objects. A "p LED_mapper" object maps sensor data to LED patterns. Four "p sound_module" objects (1-4) process audio signals, with a "p echo_machine" object providing feedback. A "loadbang" object triggers the start of the patch, and a "metro 30" object provides a regular clock signal.

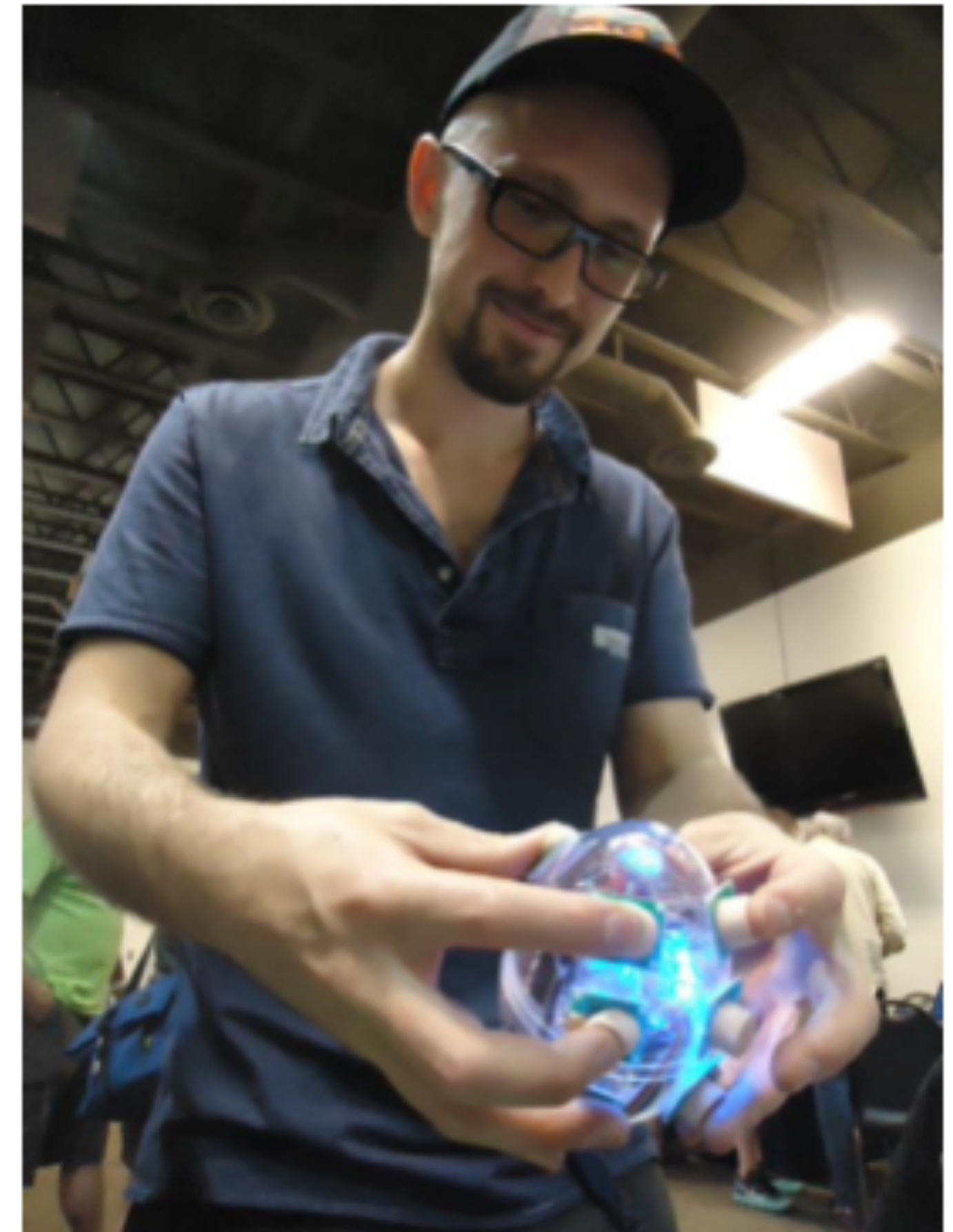
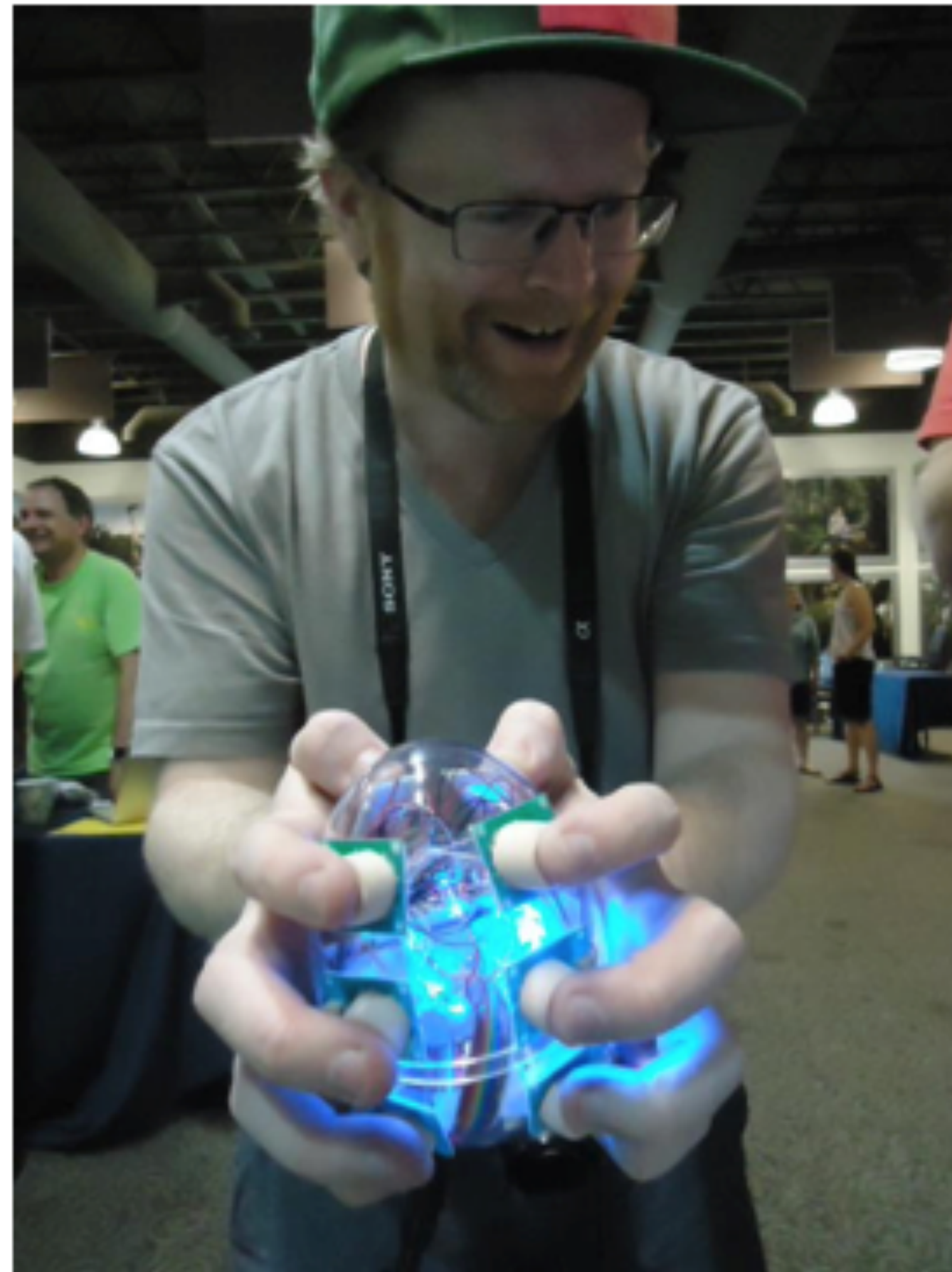
Control and Routing (switch, expr, pack, prepend): The patch uses a series of "switch 2" objects to route data between different processing paths. "expr" objects perform mathematical operations on the data. "pack" and "prepend" objects manage data flow and storage.

File Browser: A file browser window in the bottom right corner shows a list of files and folders, including "PAW_eight_06.maxpat" (405 KB), "Peller-Min" (811 KB), "untouchable_027.maxpat" (805 KB), "UniUni_single" (17.9 MB), "MIYAMOTO.mp4" (11.6 MB), "uniuni_voice_sample.maxpat" (71 KB), and "密本" (6.2 MB). The total size of the selected items is 374.9 MB.

Max Console: A "Max Console" window at the bottom right displays a red error message: "serial • specified port not available".

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Tactile/Rubbing sensor "PAW-sensor"



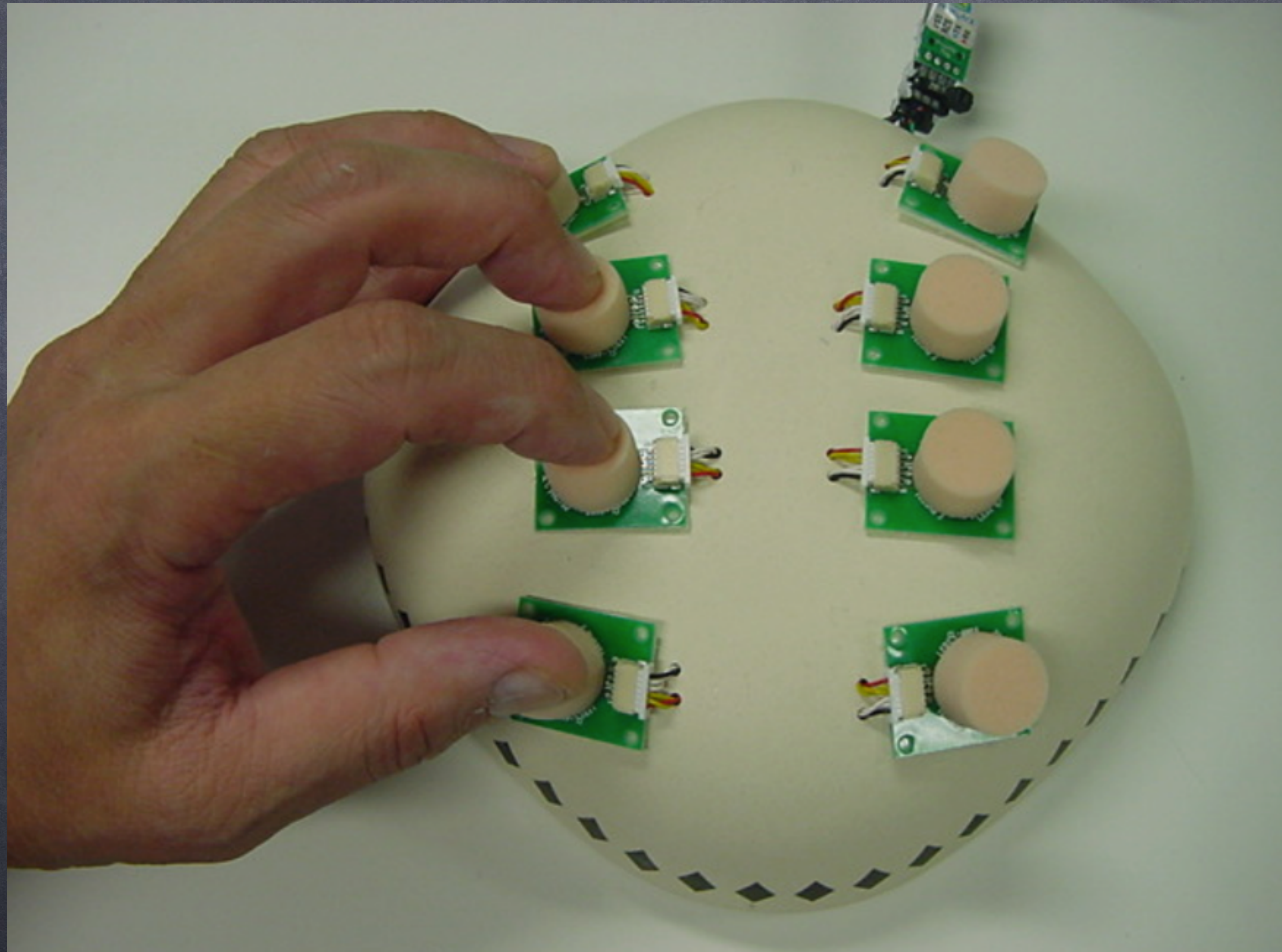
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Tactile/Rubbing sensor "PAW-sensor"



Sketching for Wellness Entertainment and Rehabilitation

Tactile/Rubbing sensor "PAW-eight"



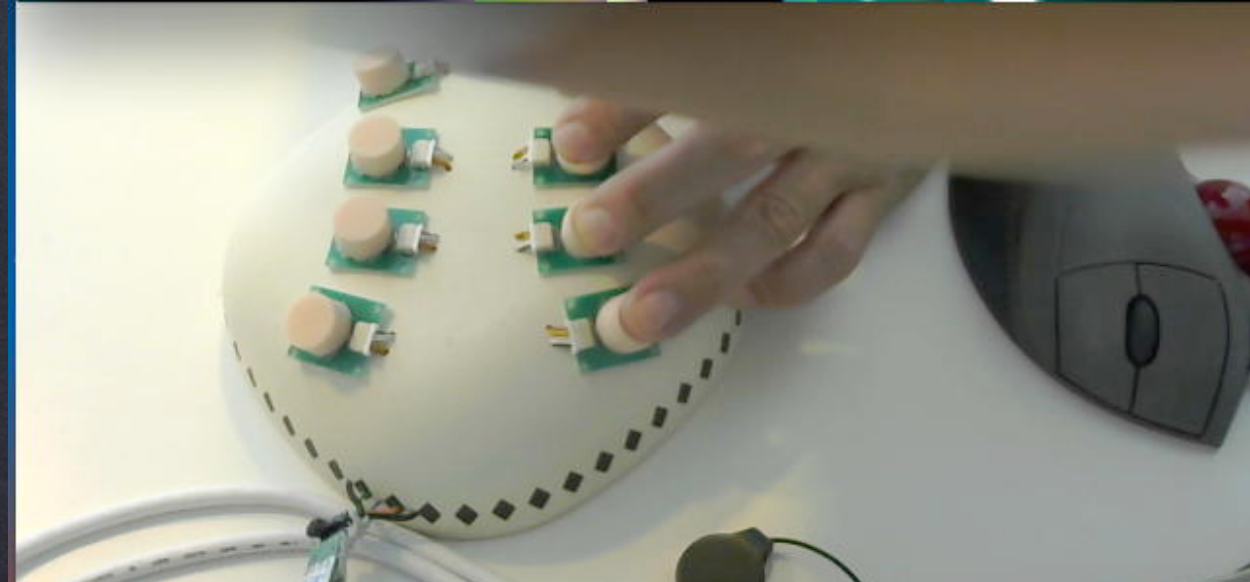
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Tactile/Rubbing sensor "PAW-eight"

The image displays a Pure Data patch titled "PAW_eight_07" and a 3D visualization of the sensor's output. The patch includes a loadbang, a message box for "s init", a metro 10 object, a print object, a serial b 115200 object, a midiparse object, a gate 4 object, a select 0 1 object, a timer 604 object, a p sorter object, a p prepend port object, a r init object, a key object, a sel 32 27 object, a p initial_setup object, a jit.window SUAC 10 50 650 530 object, a p sensor_32 object, a p display_1 through p display_8 object, a p score_calc object, a p parameter_switcher object, a r auto_rotate_on_off object, a p ball216_setup object, a p camera_view object, and a p object_rotator object.

The 3D visualization shows a collection of colorful, glowing spheres (red, orange, yellow, green, blue, purple) arranged in a cluster, representing the tactile sensor's output. The spheres are rendered with a soft glow and are set against a dark background.

The background of the entire image is a dark blue space with white stars.



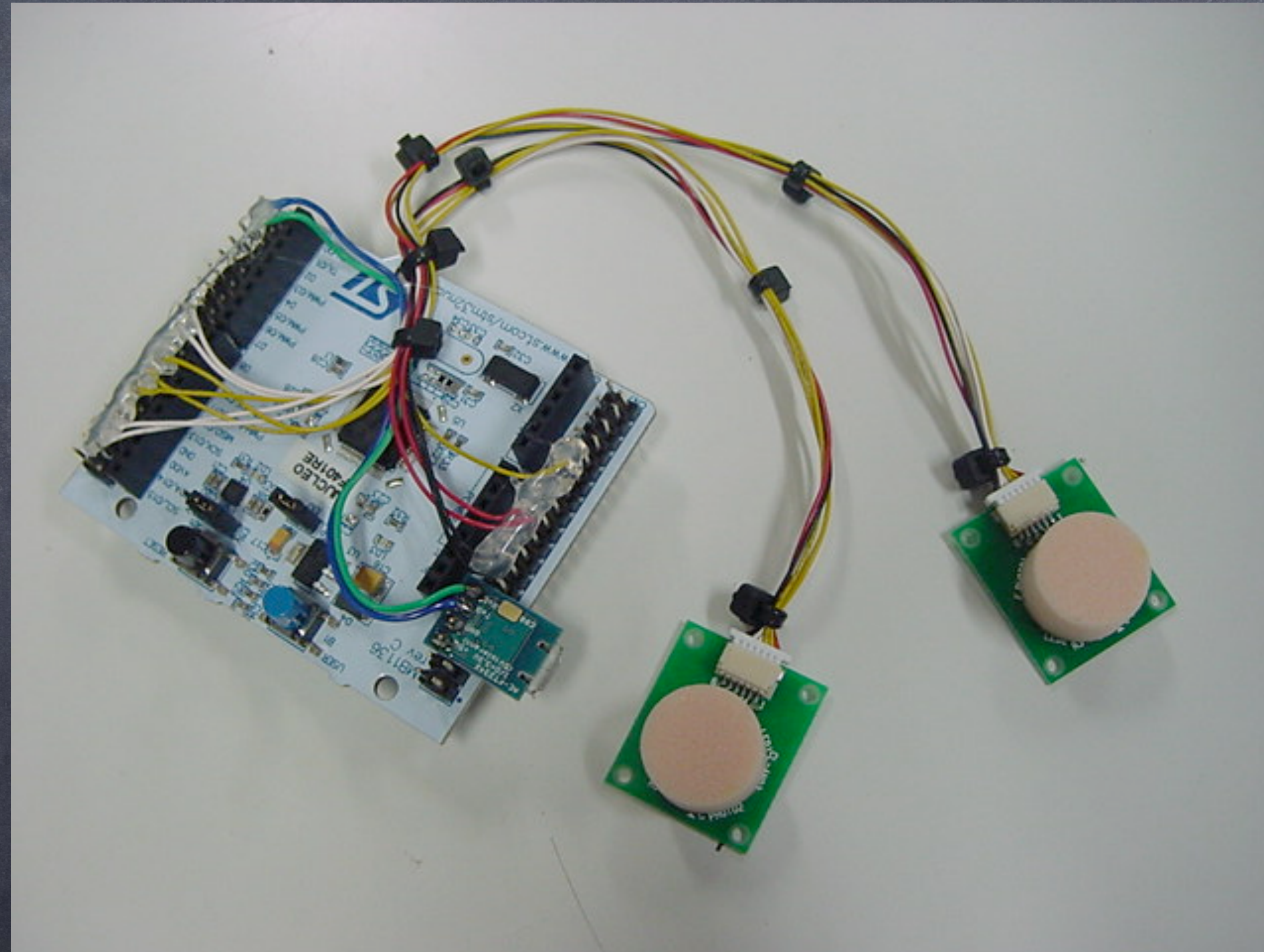
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Tactile/Rubbing sensor "PAW-eight"

You can play this system
at the "Science Fair"!

Sketching for Wellness Entertainment and Rehabilitation

Tactile/Rubbing sensor "PAW-double"



Sketching for Wellness Entertainment and Rehabilitation

Tactile/Rubbing sensor "PAW-double"

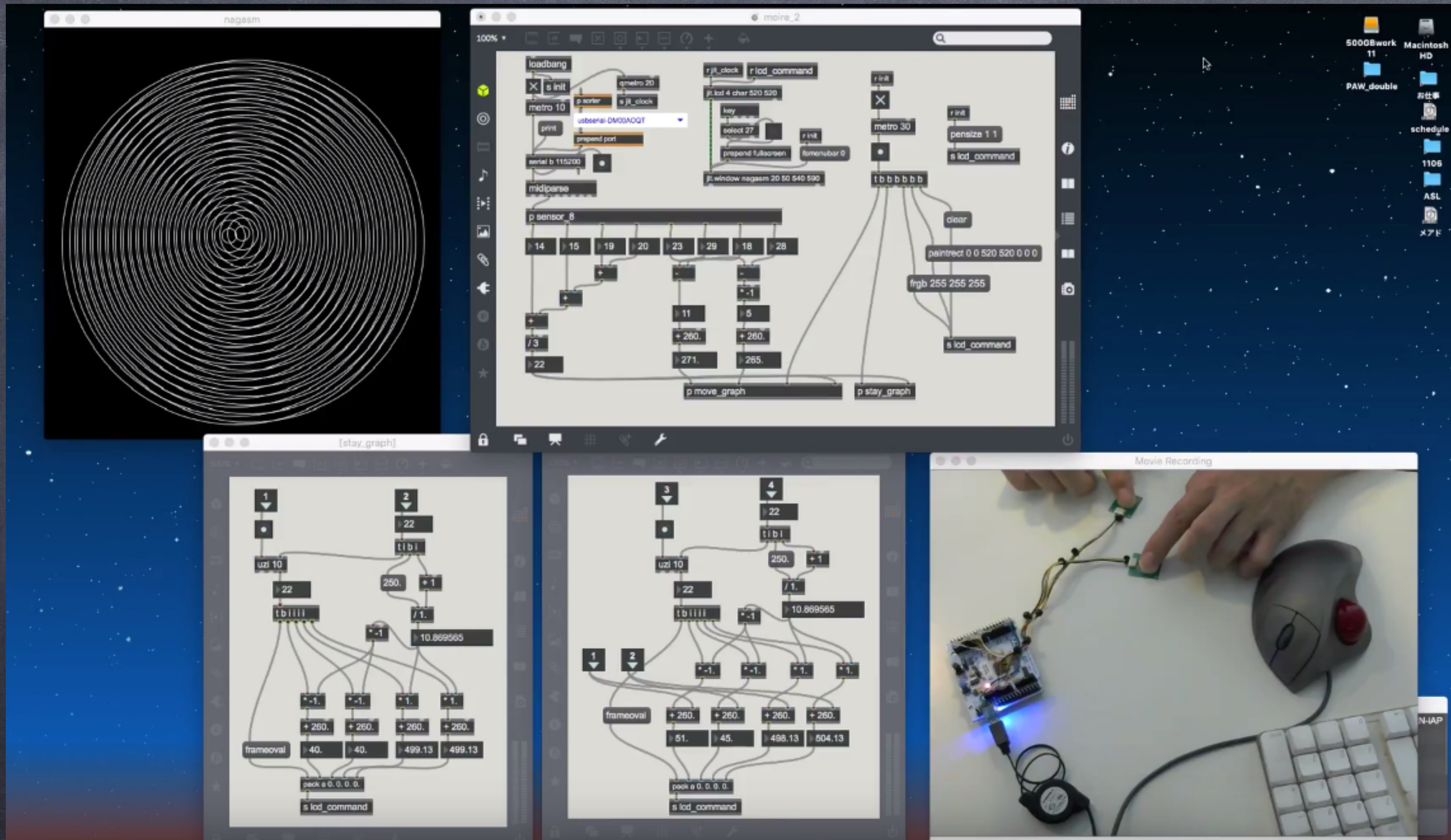
The image is a composite of four elements related to the "PAW-double" tactile sensor project:

- Top Left:** A circular sketch in a window titled "nagasm". It features a central bright white point from which numerous thin, black lines radiate outwards, creating a dense, fan-like pattern.
- Top Right:** A Pure Data patch window titled "moire_1". The patch includes several objects: "loadbang", "s init", "metro 10", "p sort", "p sensor 8", "midiparse", "serial b 115200", "p move_graph", "p stay_graph", "r jk_clock", "r lod_command", "j.lod 4 char 520 520", "key", "select 27", "prepend fullscreen", "fmsensubar 0", "metro 30", "t b b b b b b", "clear", "paintrect 0 0 520 520 0 0 0", "rgb 255 255 255", "frameoval 10 10 510 510", "s lod_command", "r init", "pensize 1 1", and "s lod_command".
- Bottom Center:** A photograph of a person's hands wearing a yellow protective glove, interacting with a white surface. A small green sensor is attached to the hand, and a computer mouse is visible nearby.
- Bottom Right:** A Max Console window titled "Max Console" showing the following text:

```
serial • port a: Bluetooth-Incoming-Port  
serial • port b: Muse-30CB-RN-IAP  
serial • port c: usbserial-DM00AQQT
```

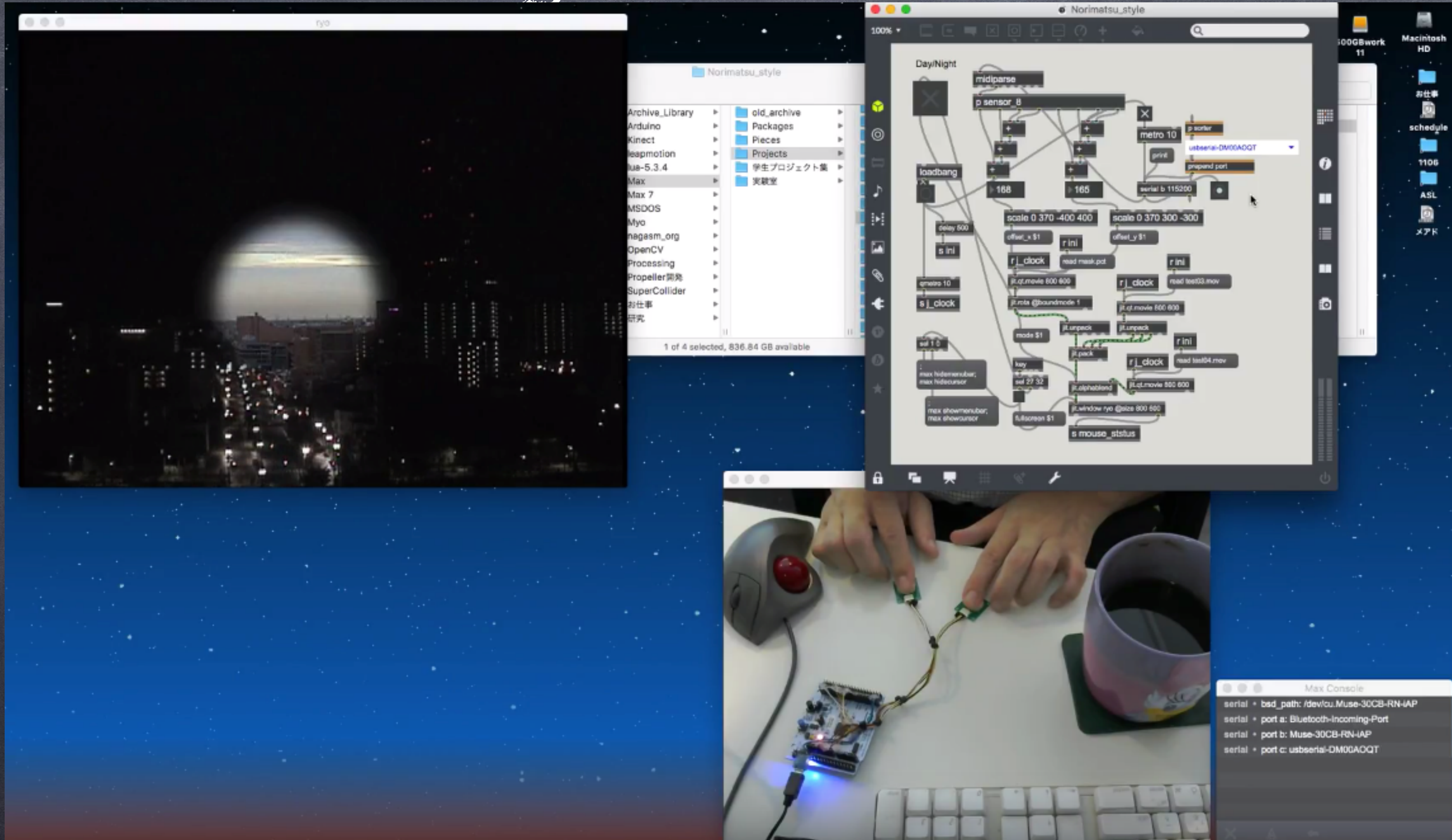
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Tactile/Rubbing sensor "PAW-double"



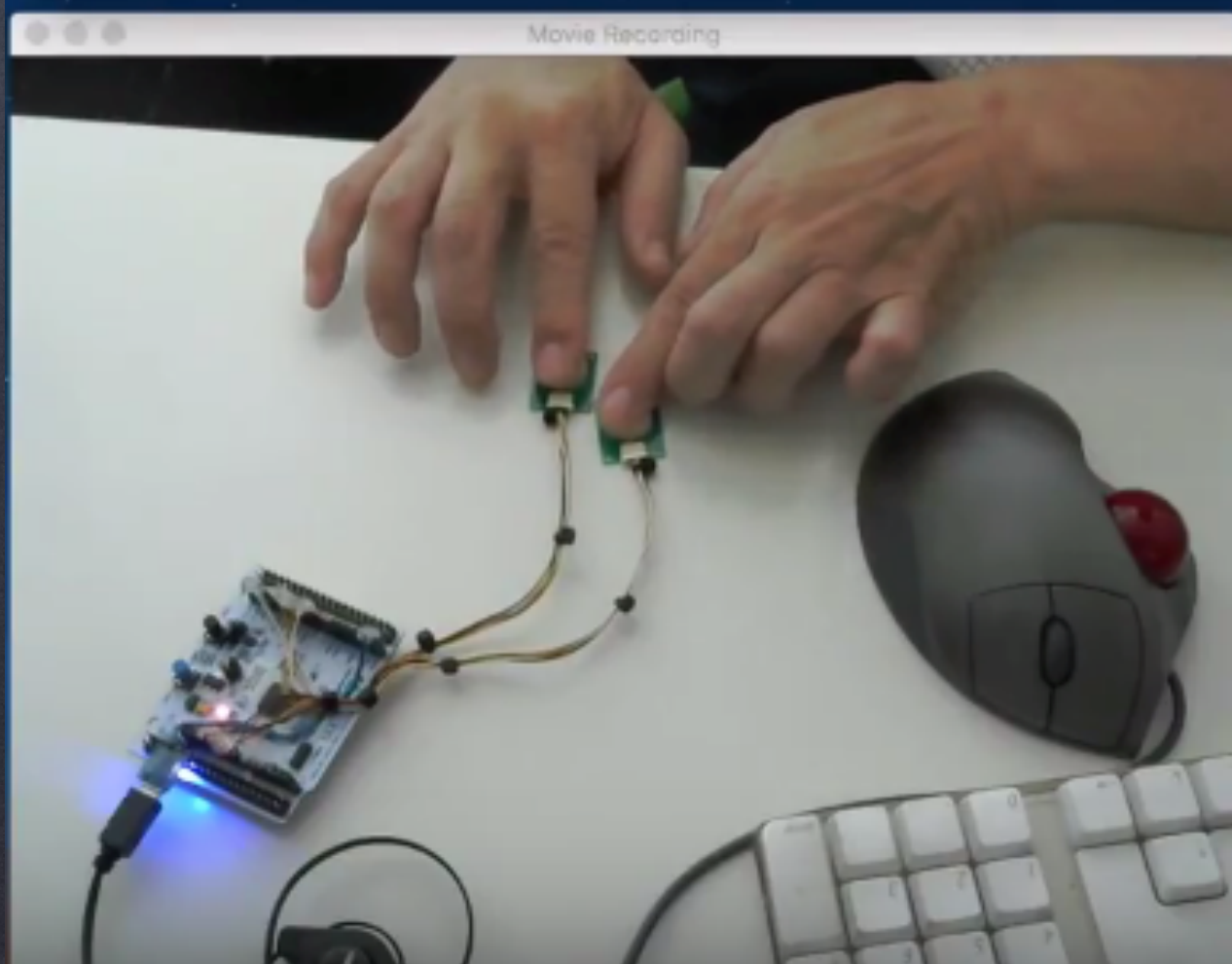
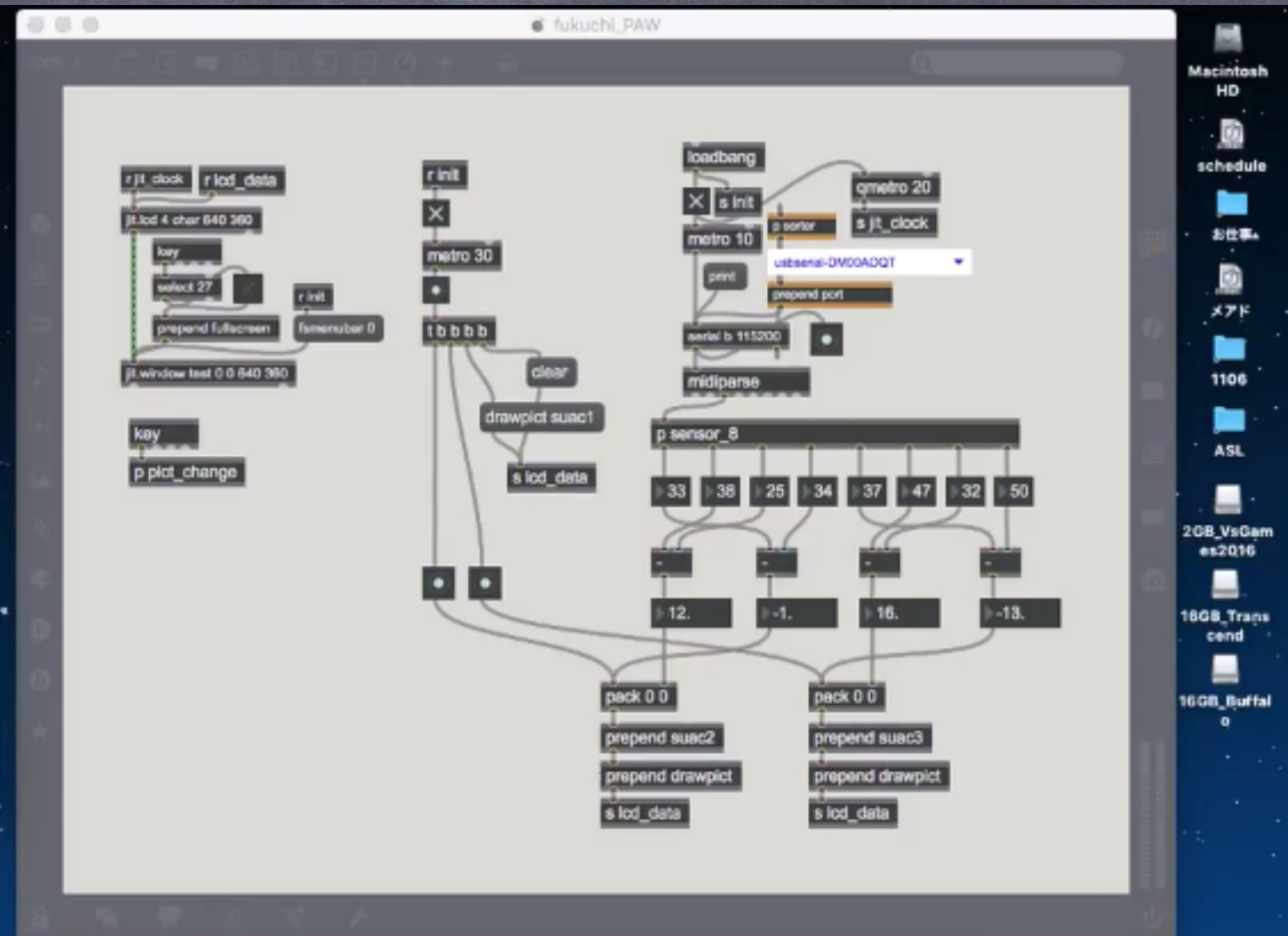
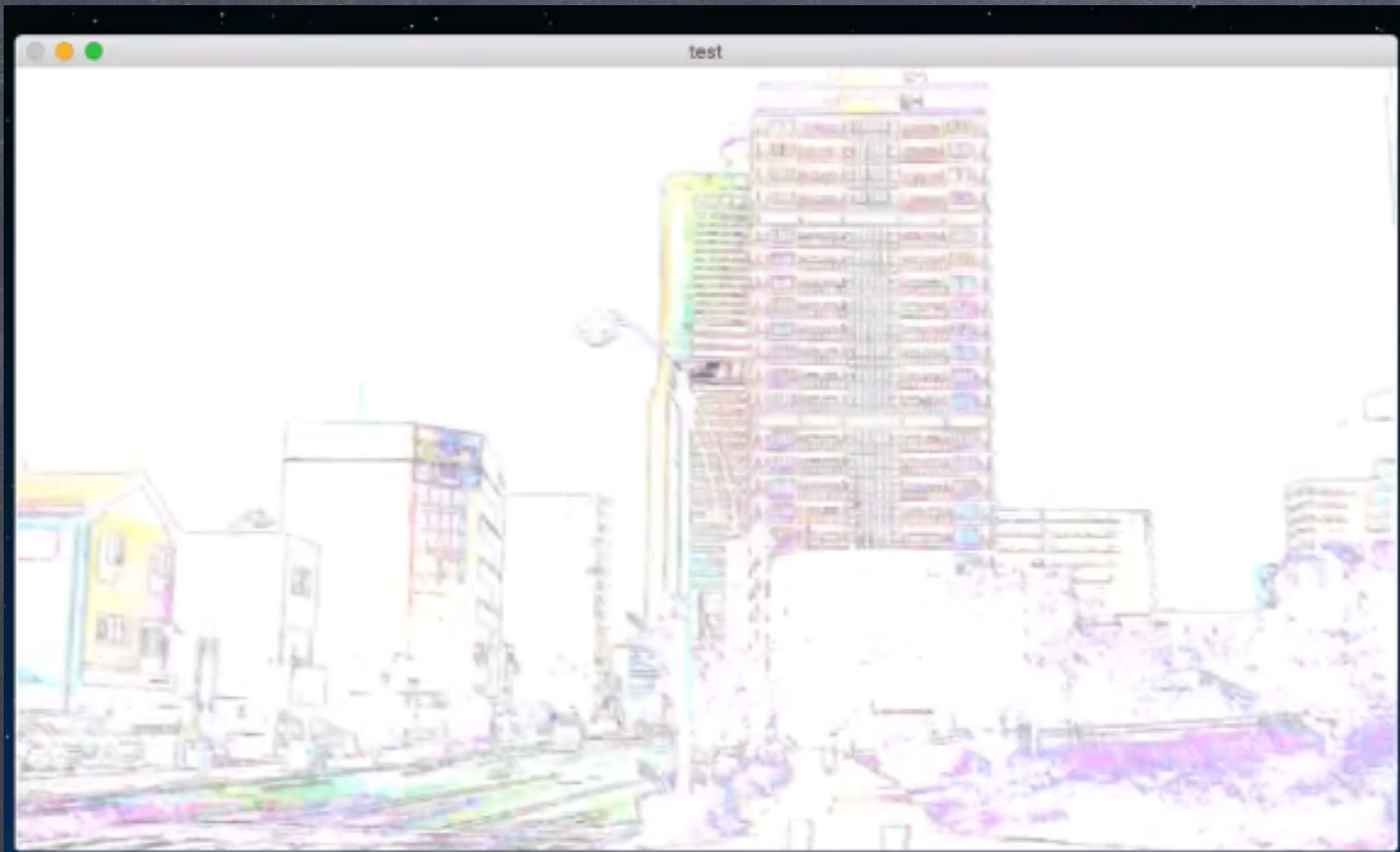
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Tactile/Rubbing sensor "PAW-double"



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Tactile/Rubbing sensor "PAW-double"



Name	Size	Date...dified
Fukuchi	9.5 MB	2018/07/25
• fukuchi_PAW.maxpat	76 KB	2018/07/26
• fukuchi_old.maxpat	79 KB	2018/07/24
edge12.png	490 KB	2018/07/22
edge11.png	490 KB	2018/07/22
edge10.png	490 KB	2018/07/22
edge9.png	232 KB	2018/07/22
edge8.png	232 KB	2018/07/22
edge7.png	232 KB	2018/07/22
edge4.png	476 KB	2018/07/18
edge5.png	476 KB	2018/07/18
edge6.png	476 KB	2018/07/18
edge3.png	926 KB	2018/07/18
edge2.png	926 KB	2018/07/18

```
Max Console
serial • bsd_path: /dev/cu.Muse-30CB-RN-IAP
serial • bsd_path: /dev/cu.Muse-30CB-RN-IAP
serial • port a: Bluetooth-Incoming-Port
serial • port b: Muse-30CB-RN-IAP
serial • port c: usbserial-DM00A0QT
```

Sketching for Wellness Entertainment and Rehabilitation

Tactile/Rubbing sensor "PAW-double"

The image is a composite showing the development of a tactile sensor interface. At the top left is a hand-drawn sketch of a white, ghost-like character with a red mouth and eyes. To its right is a Pure Data patch window titled 'higo_PAW'. The patch is a complex network of objects including 'loadbang', 'metro', 'serial', 'midiparse', 'p sensor_8', 'pack a 0 0 0 0', 'prepend drawpict', and 's lod_command'. It features several 't b b b b' objects and numerical values like 100, 120, 300, 320, 324, 82, and 108. Below the patch is a file browser window showing a list of files:

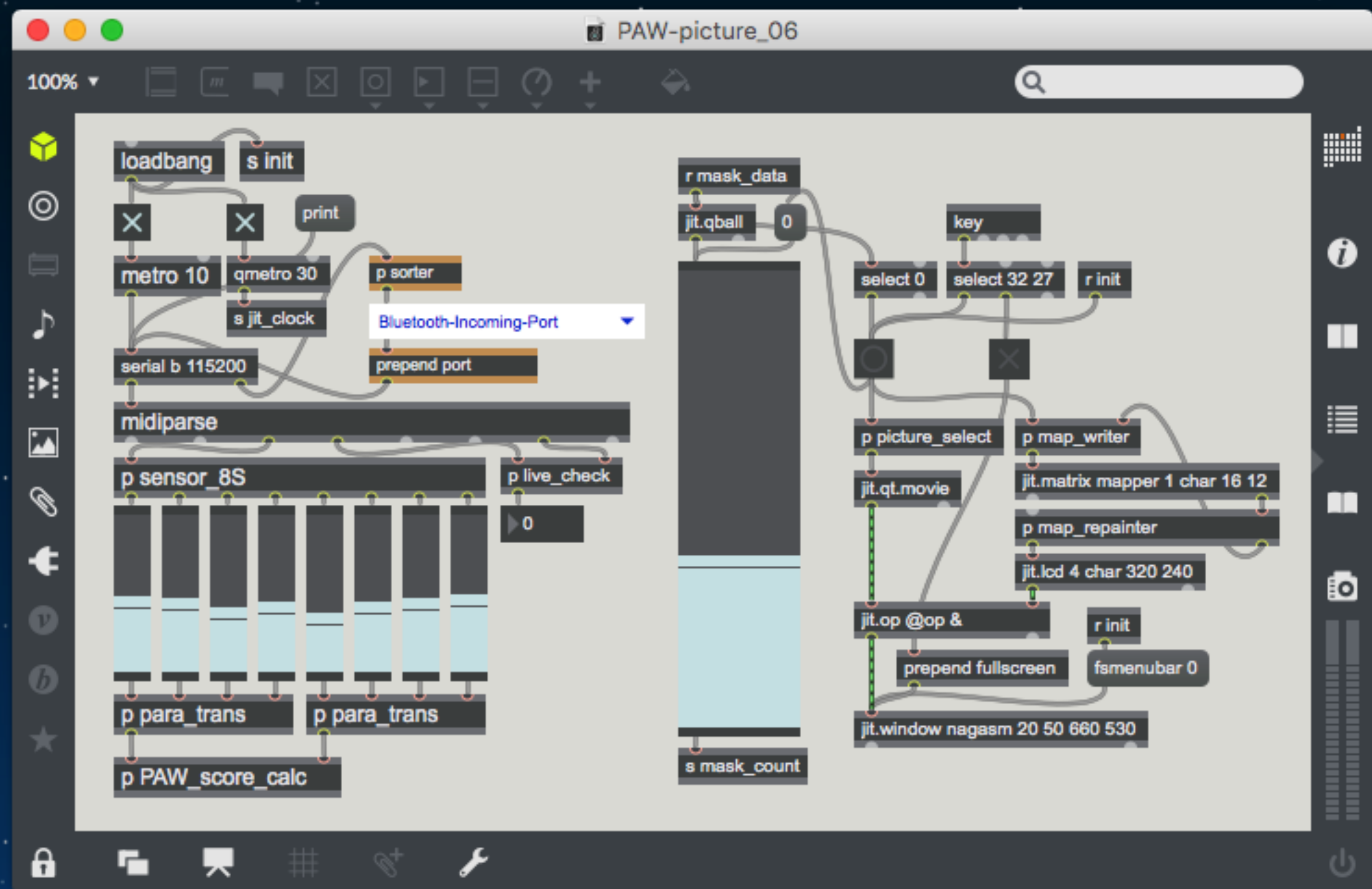
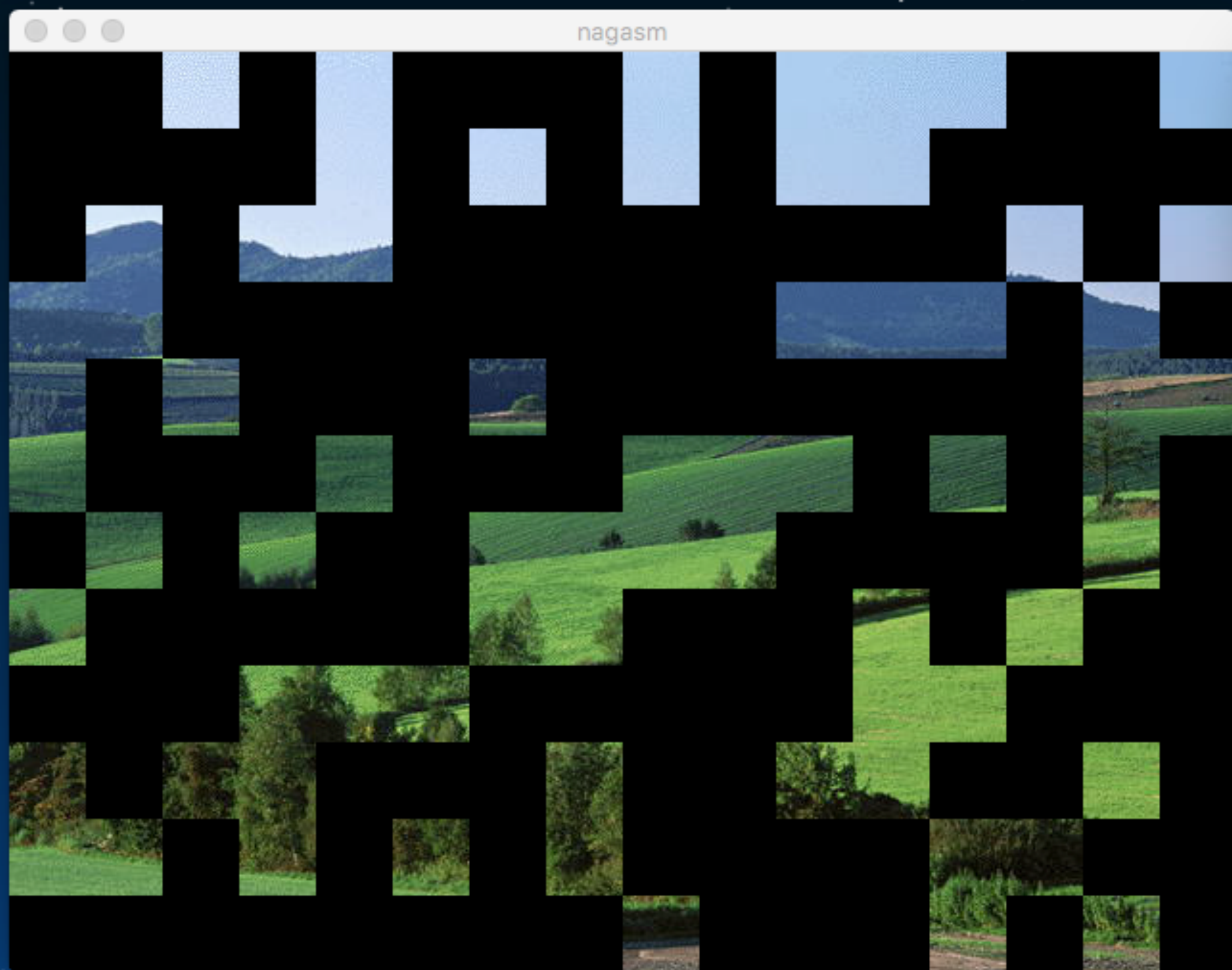
Name	Size	Date...dified
PAW_B_nagasm.maxpat	43 KB	2018/07/26
Higo	322 KB	2018/07/26
higo_PAW.maxpat	69 KB	2018/07/26
mig_hoppe.png	19 KB	2018/07/25
hidari_hoppe.png	19 KB	2018/07/25
0718_pat..02.maxpat	84 KB	2018/07/18
base_chara.png	35 KB	2018/07/18
0711_pat..03.maxpat	72 KB	2018/07/11
onngaku_chara.png	18 KB	2018/07/11
Fukuchi	9.5 MB	2018/07/25
Ogata	89 KB	2018/07/25
Hirata	82 KB	2018/07/25
Norimatsu_style	46.4 MB	2018/07/11

At the bottom left is a photograph of the physical hardware, showing a small circuit board with two green tactile sensors connected to a computer mouse and keyboard. At the bottom right is a 'Max Console' window with the following text:

```
serial * bsd_path: /dev/cu.Muse-30CB-RN-IAP
serial * port a: Bluetooth-Incoming-Port
serial * port b: Muse-30CB-RN-IAP
serial * port c: usbserial-DM00AQQT
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Tactile/Rubbing sensor "PAW-double"



Sketching for Wellness Entertainment and Rehabilitation

Tactile/Rubbing sensor "PAW-double"

You can play this system
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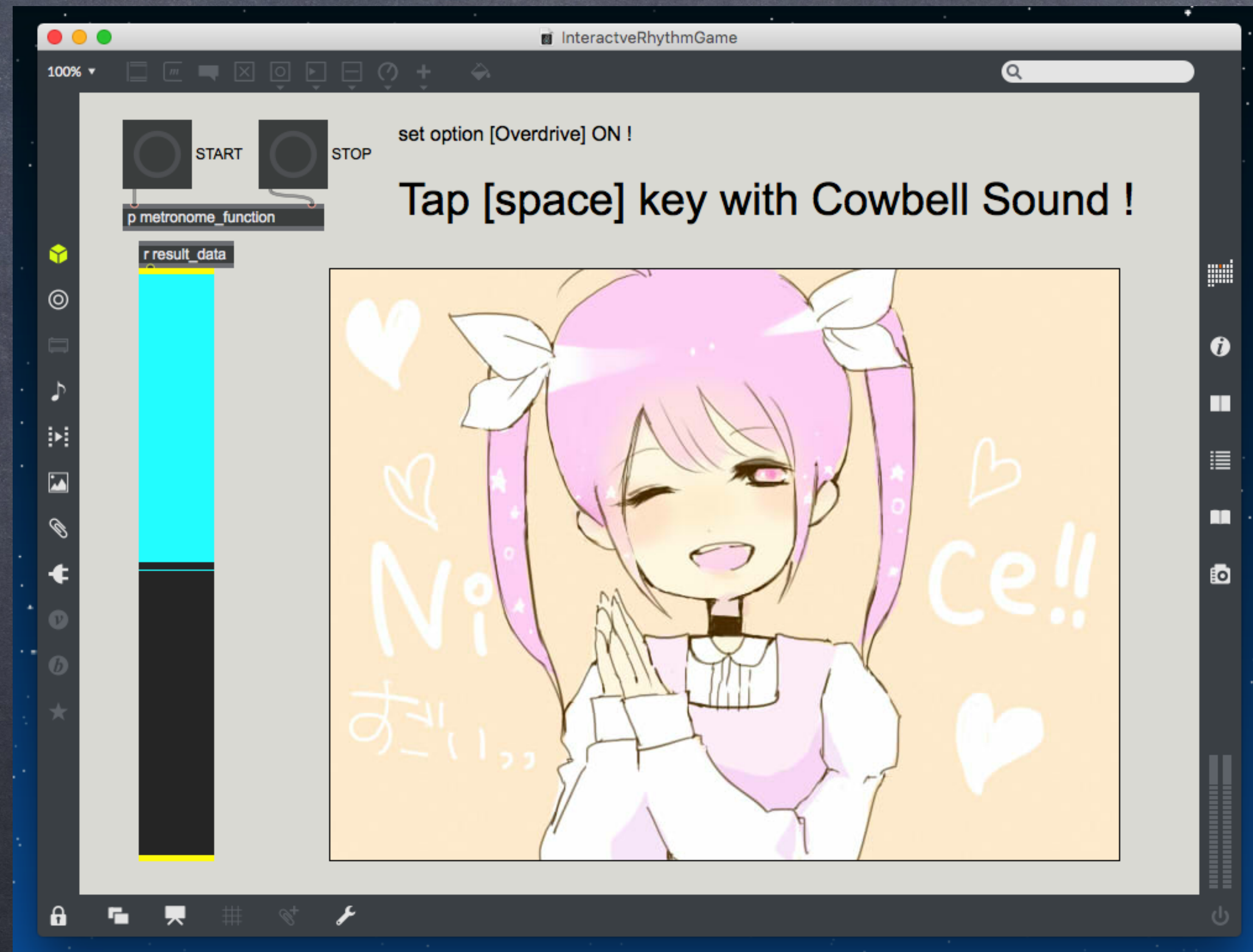
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Collaboration Projects
with Specialists of
Biofeedback Rehabilitation

Sketching for Wellness Entertainment and Rehabilitation

Dementia prevention

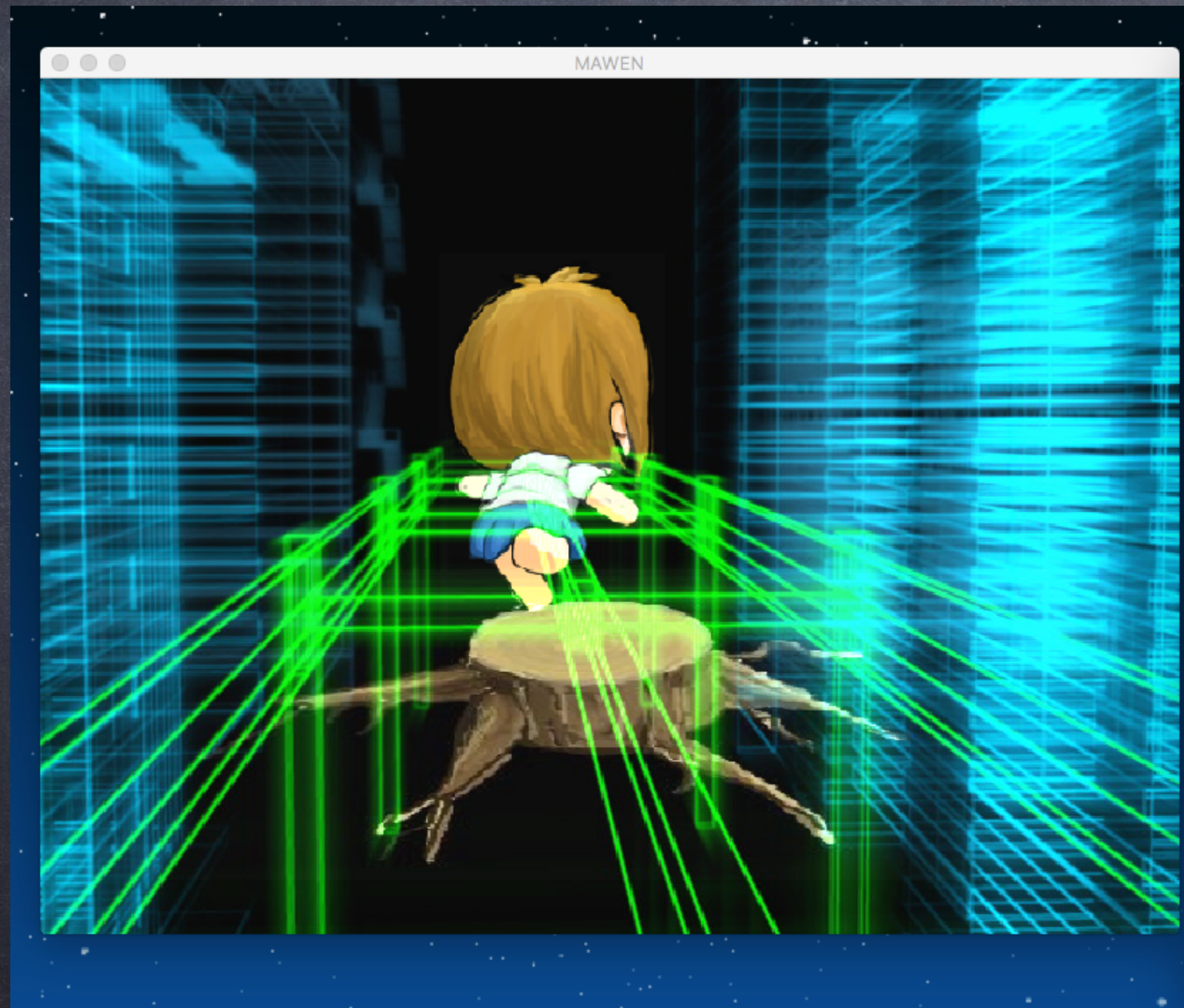
Dementia rehabilitation



Sketching for Wellness Entertainment and Rehabilitation

Dementia prevention

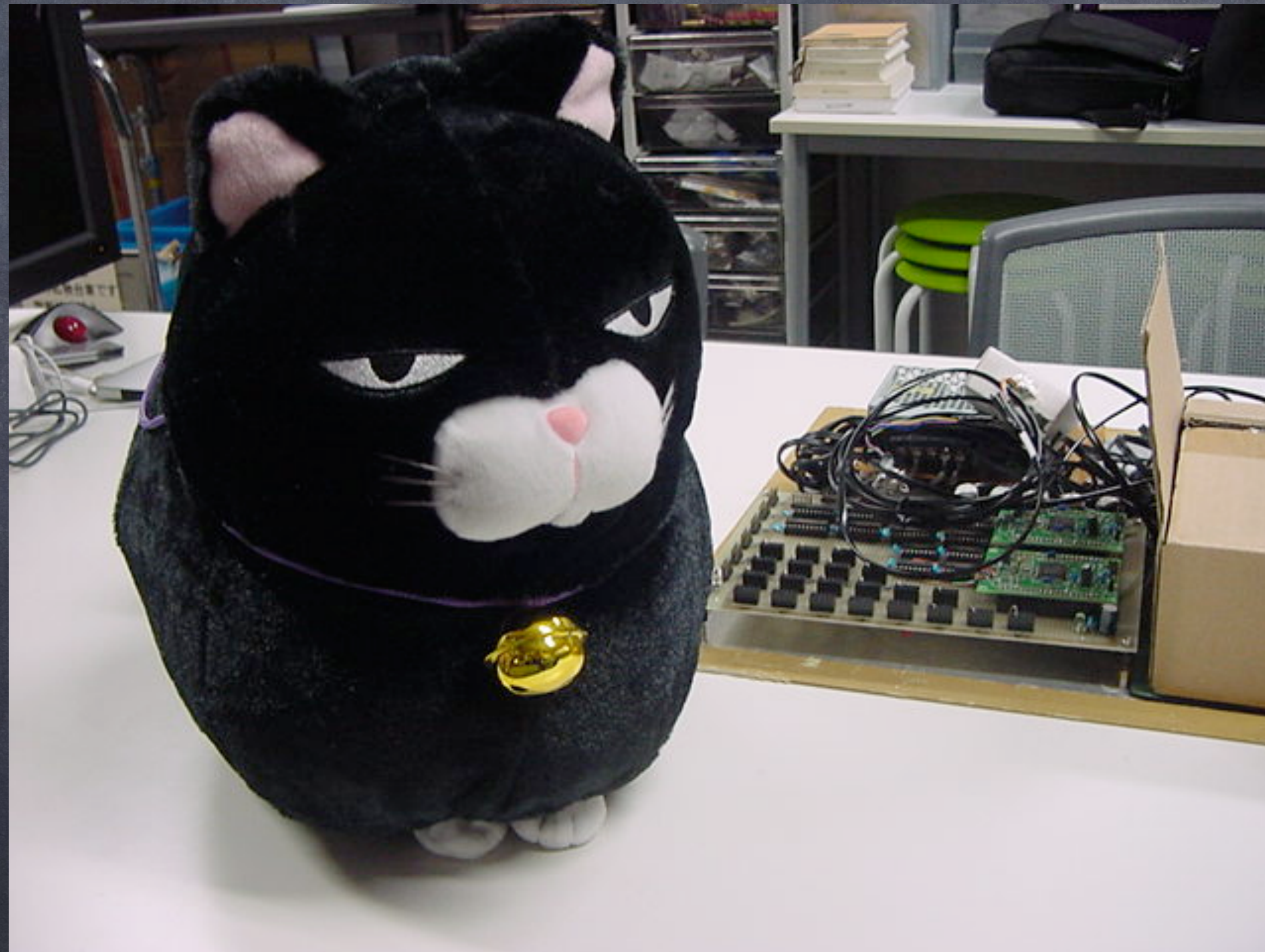
Dementia rehabilitation



Sketching for Wellness Entertainment and Rehabilitation

Dementia prevention

Dementia rehabilitation



Sketching for Wellness Entertainment and Rehabilitation

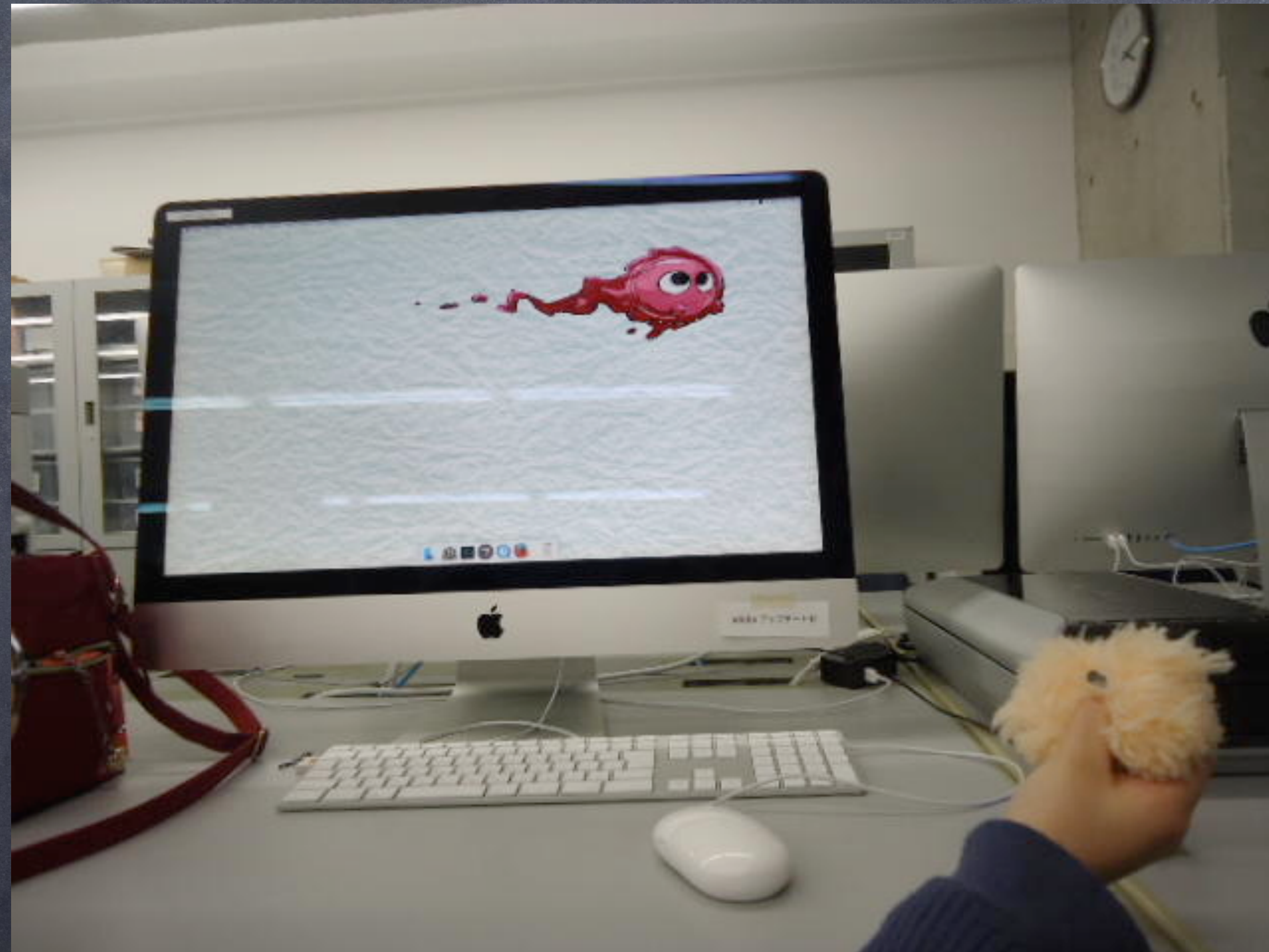
Dementia prevention

Dementia rehabilitation



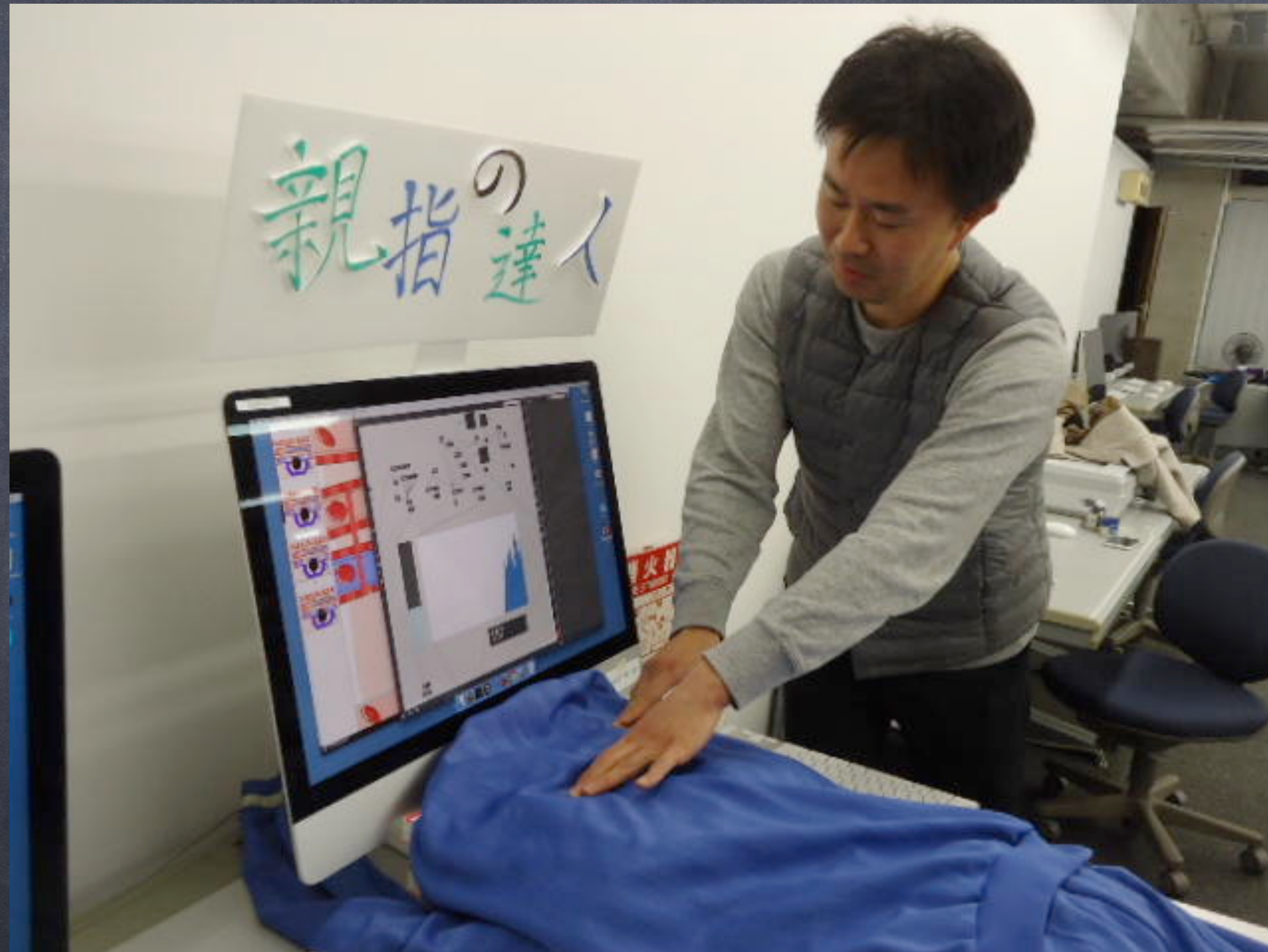
Sketching for Wellness Entertainment and Rehabilitation

Sketching Workshop in SUAC



Sketching for Wellness Entertainment and Rehabilitation

Sketching Workshop in SUAC



Sketching for Wellness Entertainment and Rehabilitation

Sketching Workshop in SUAC



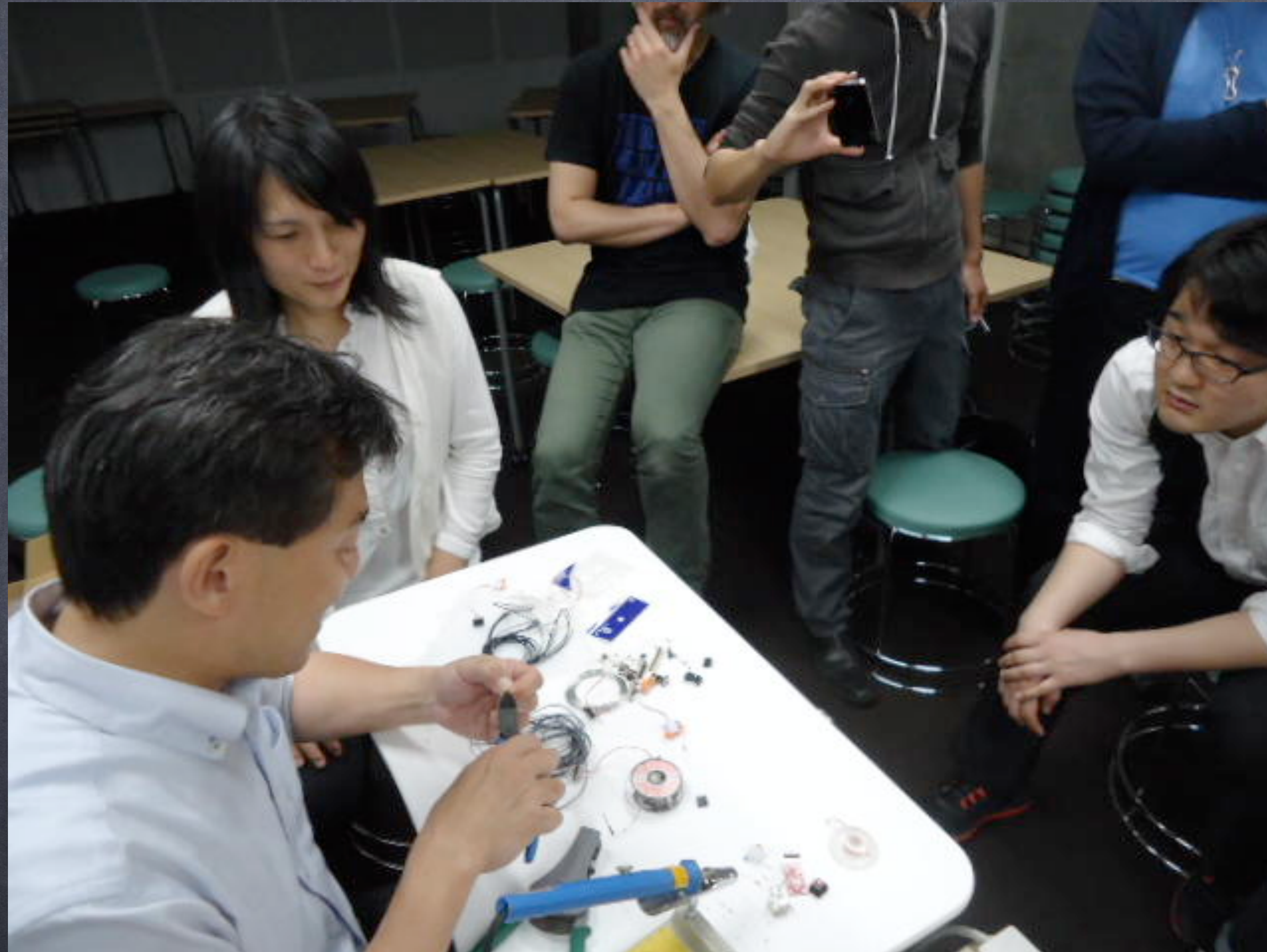
Sketching for Wellness Entertainment and Rehabilitation

Sketching Workshop in SUAC



Sketching for Wellness Entertainment and Rehabilitation

Sketching Workshop in Japan



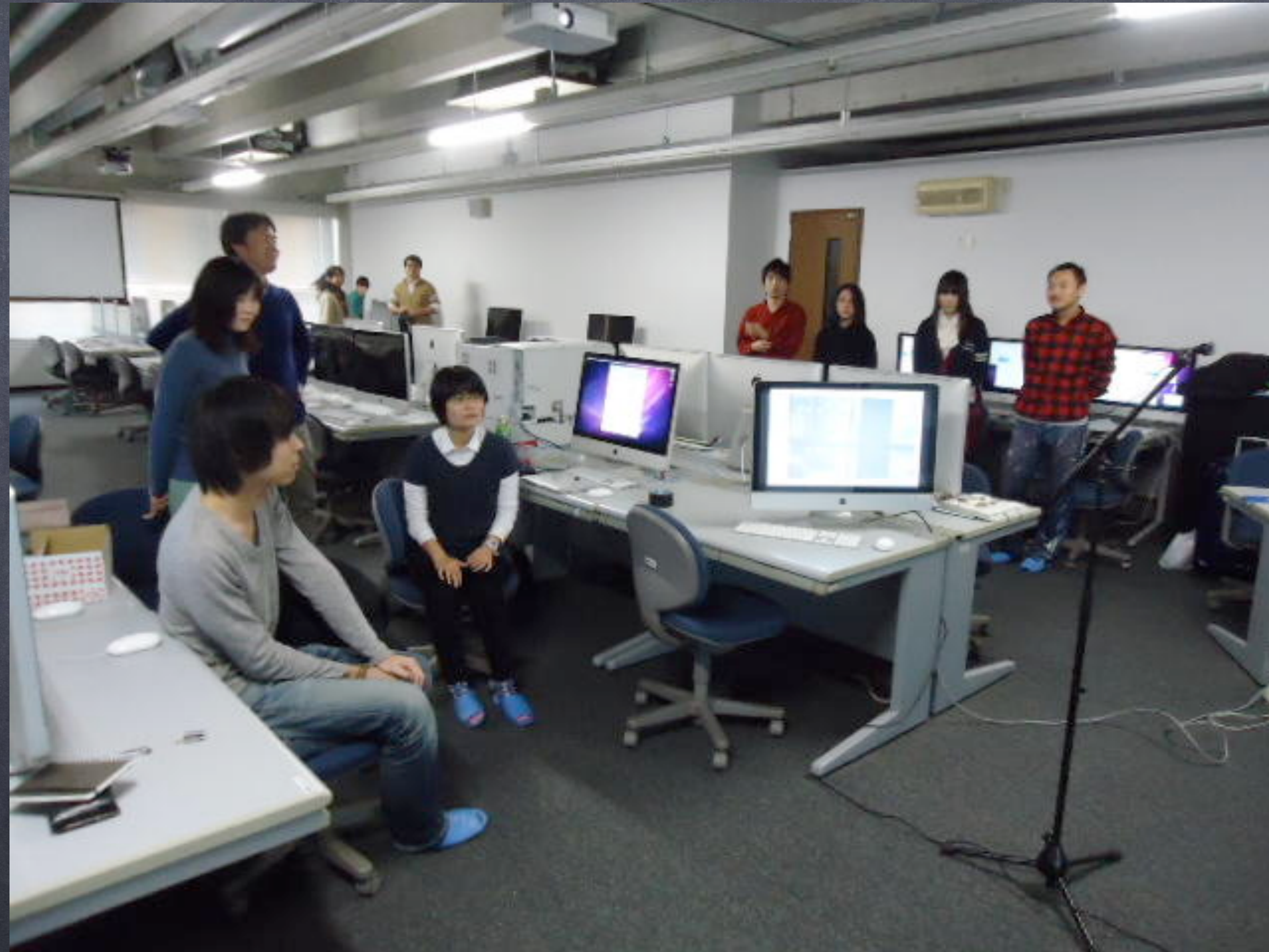
Sketching for Wellness Entertainment and Rehabilitation

Sketching Workshop in Japan



Sketching for Wellness Entertainment and Rehabilitation

Sketching Workshop in Japan



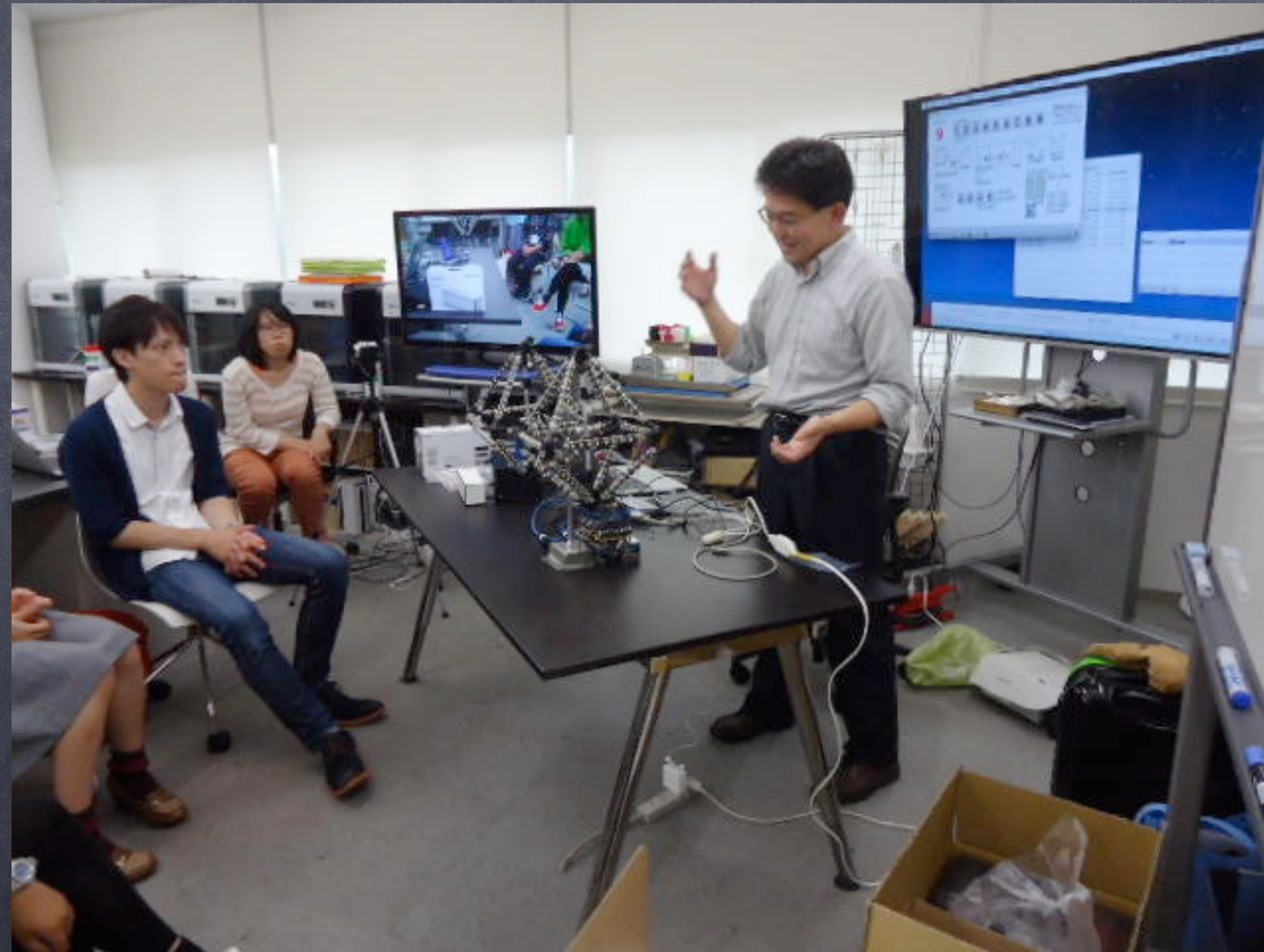
Sketching for Wellness Entertainment and Rehabilitation

Sketching Workshop in Japan



Sketching for Wellness Entertainment and Rehabilitation

Sketching Workshop in Japan



Sketching for Wellness Entertainment and Rehabilitation

Sketching Workshop in Japan



Sketching for Wellness Entertainment and Rehabilitation

Sketching Workshop in Russia



Sketching for Wellness Entertainment and Rehabilitation

Sketching Workshop in Moscow



Sketching for Wellness Entertainment and Rehabilitation

Sketching Workshop in Poland



Sketching for Wellness Entertainment and Rehabilitation

That's all, thank you.