

Multimedia Music with Dance

Dance the Music

Gwangyu Lee

Gypsy Jazz

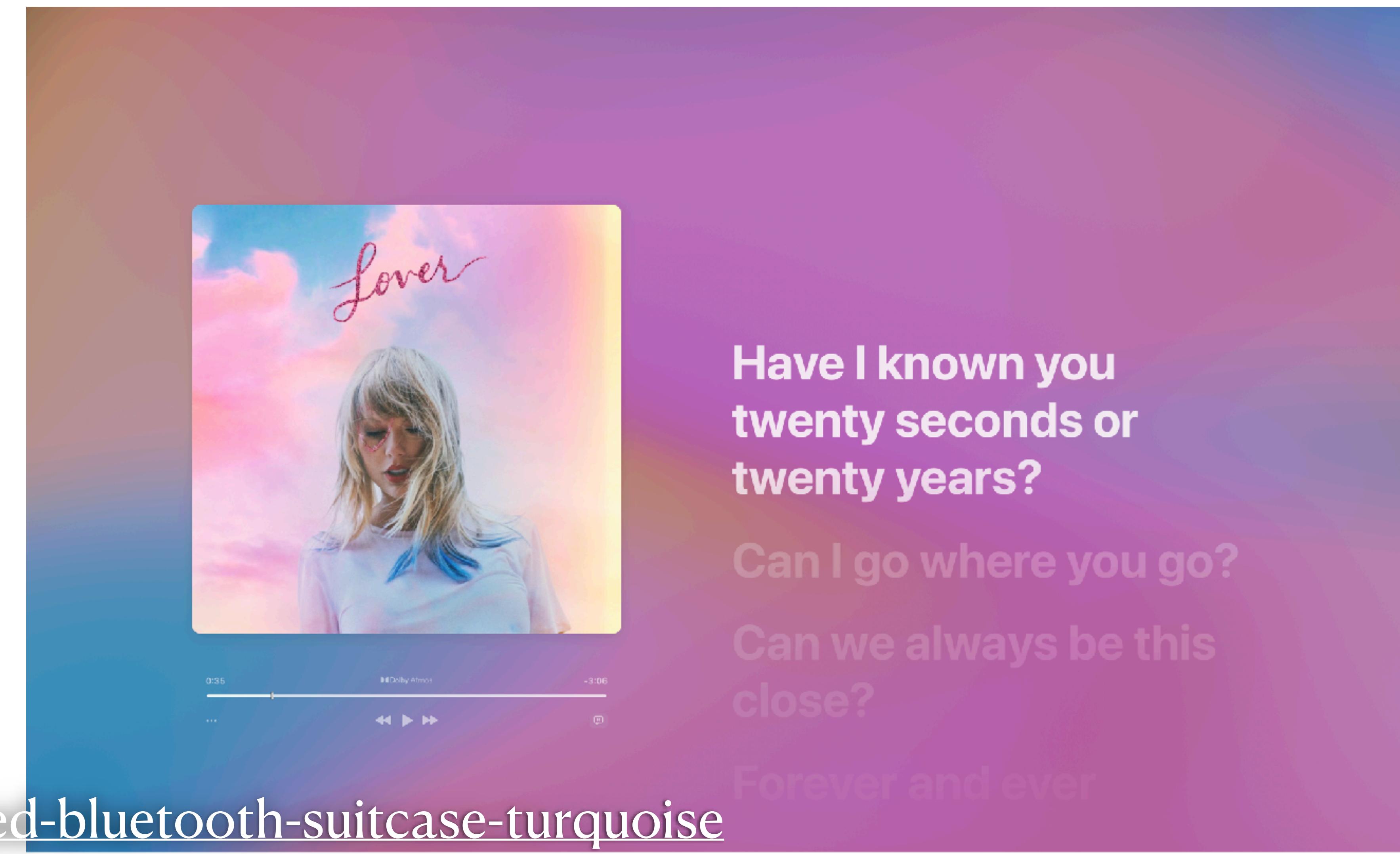


Tango





https://www.staimusic.com/en/playlists/breakbeat-dance-battles_43.html
https://soundcloud.com/ray-han_official/popular-tracks



<https://reverb.com/item/75930906-crosley-cruiser-deluxe-vintage-turntable-3-speed-bluetooth-suitcase-turquoise>

<https://hitsdailydouble.com/news&id=311462>

<https://www.experthoot.com/lander>

<https://music.apple.com/us/album/lover/1468058165>

**What if the dancers could “Dance the music”
rather than “Dance to the music”?**

Interactive Dance

Tchaikovsky





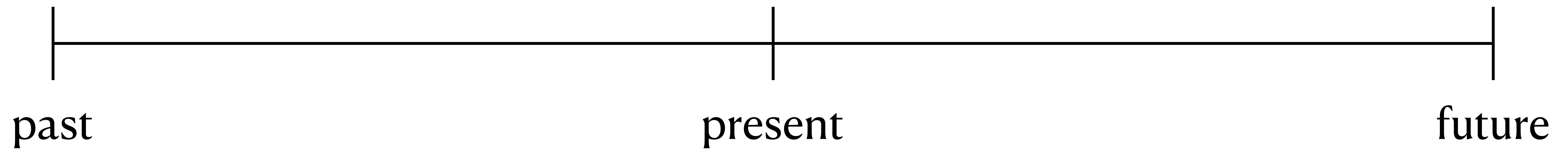
<https://www.pinterest.com/pin/295555990863007/>



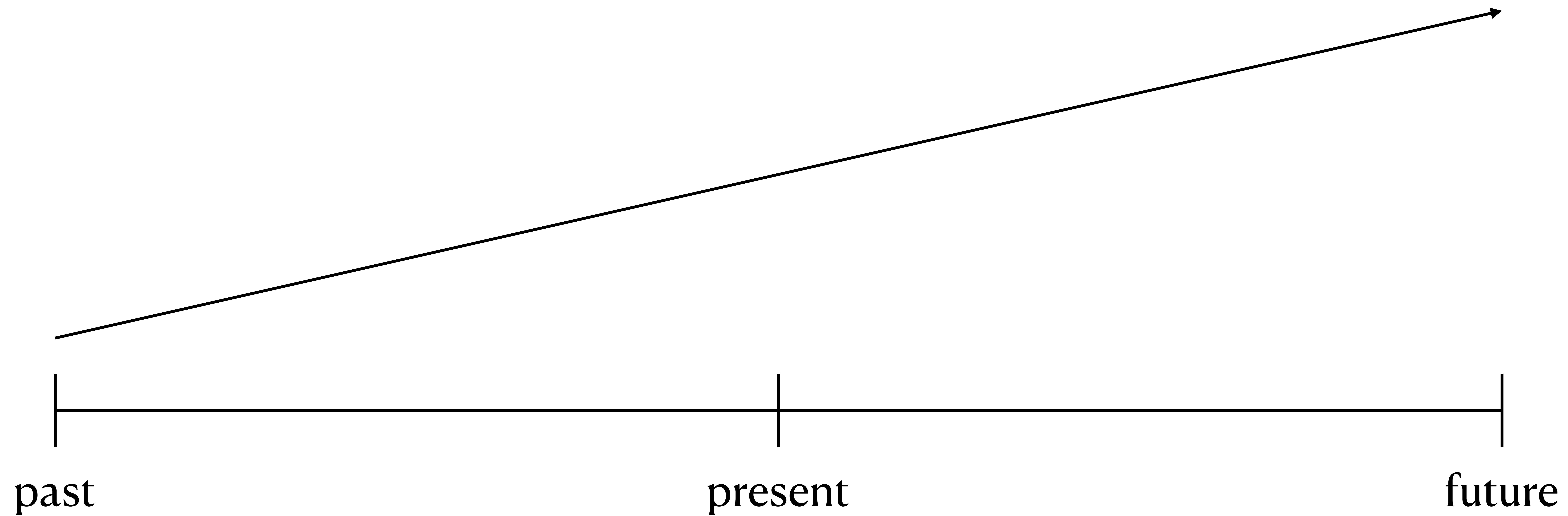
**“Audio content and visual content
in multimedia cannot be broken down
into two independent elements”**

Why Interactive Dance?

Linear-time

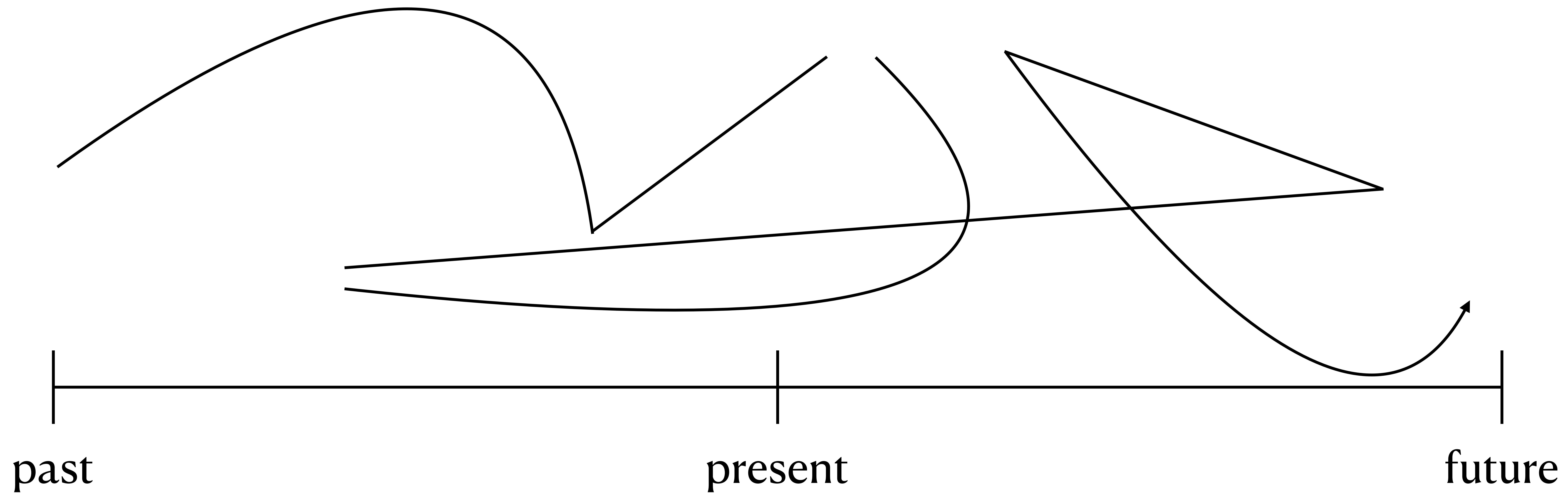


Linear-time



Real-time

Real-time



Motion-Tracking Technologies

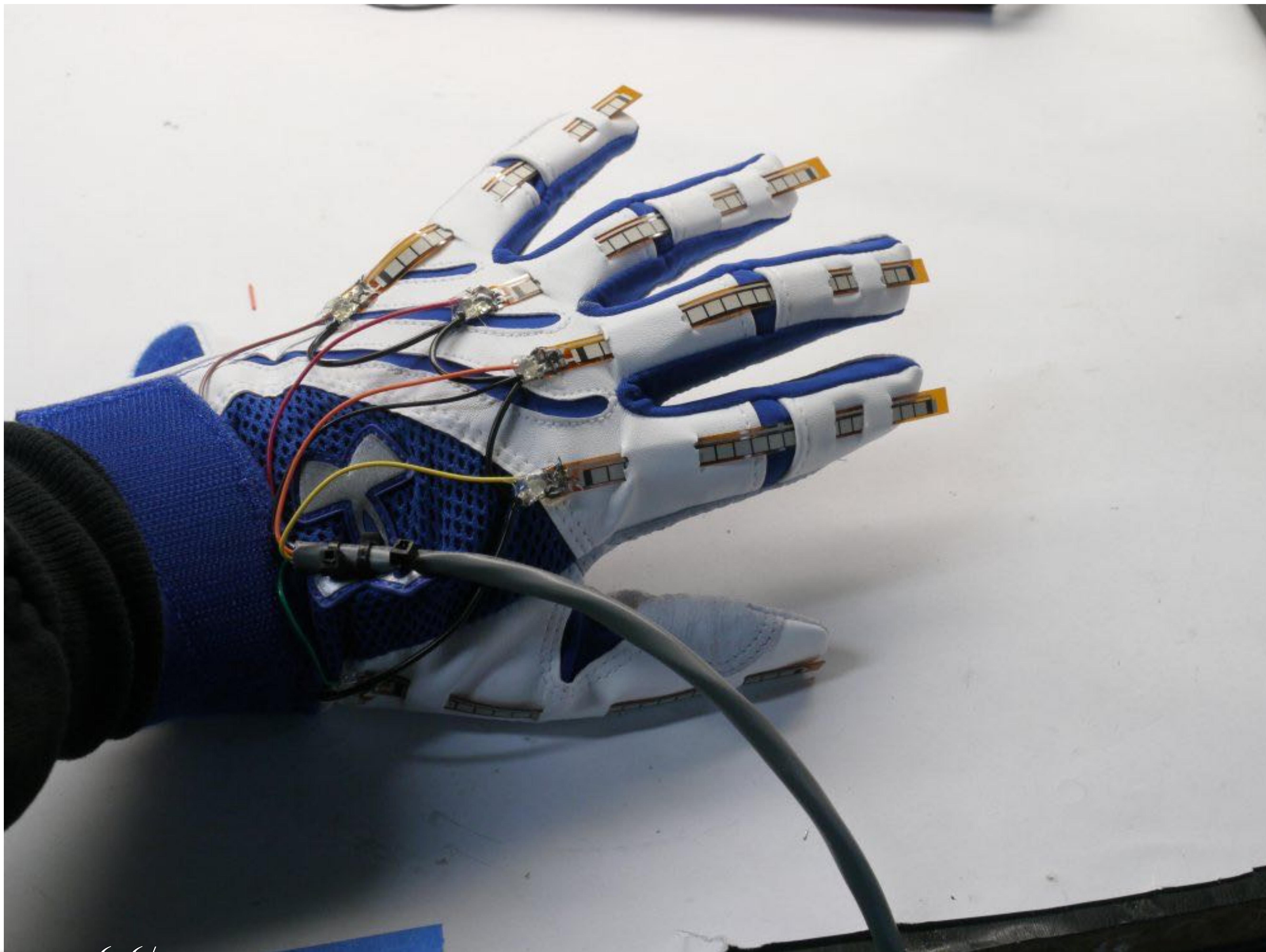
Motion-Tracking Technologies

- Inside-In
- Inside-Out
- Outside-In
- Camera-based motion-tracking systems(Computer Vision)

Inside-In



Inside-In



Inside-Out





<https://youtu.be/S-T8kcSRLLo?feature=shared&t=419>

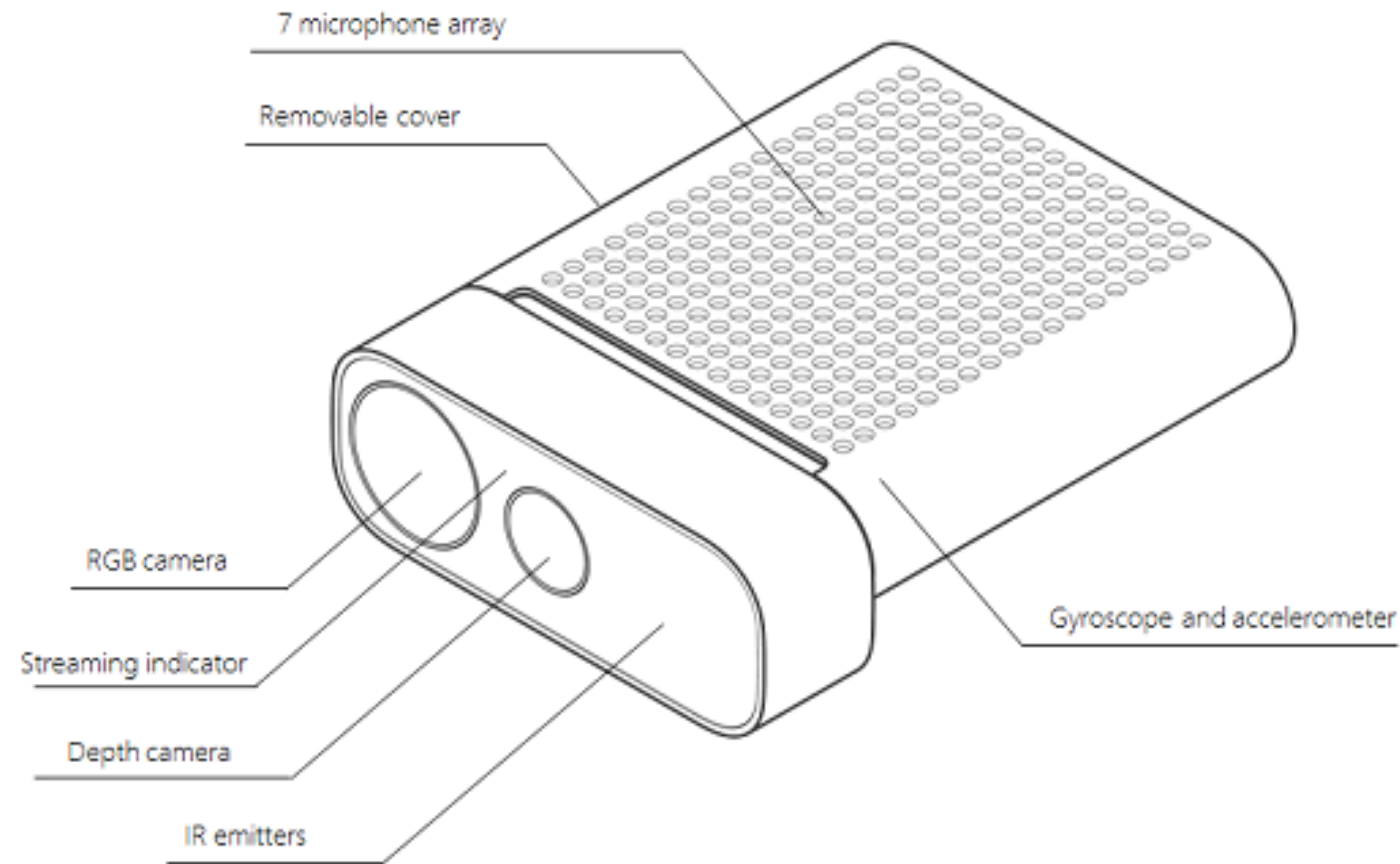
Outside-In



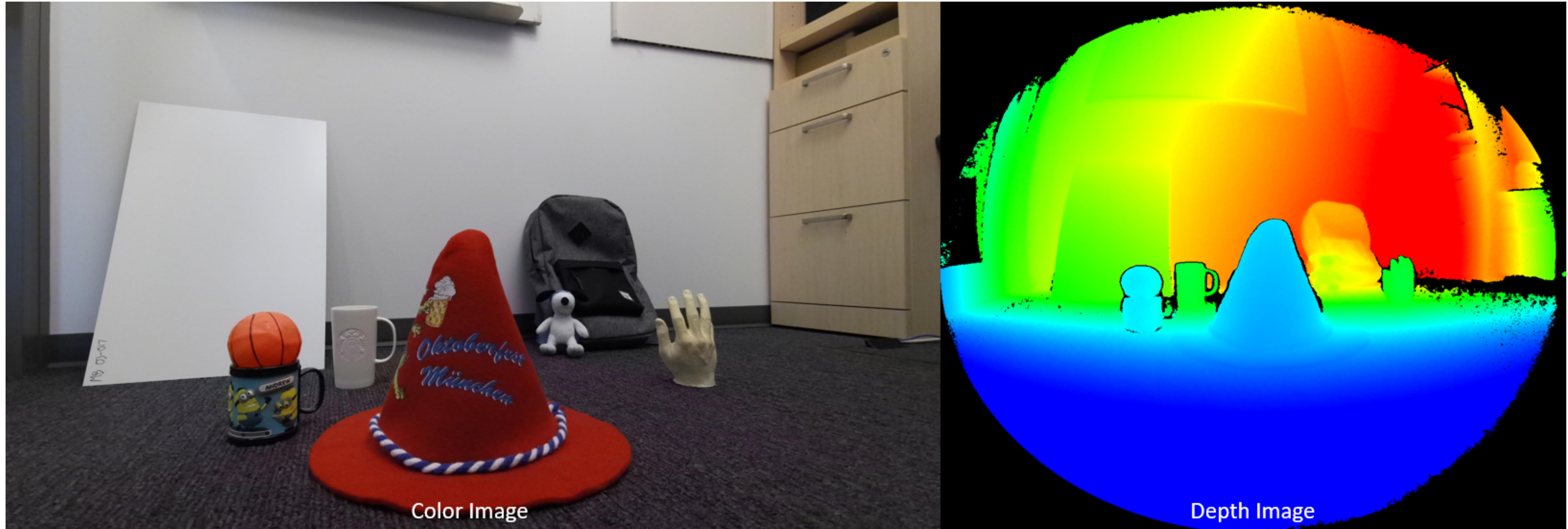
Outside-In



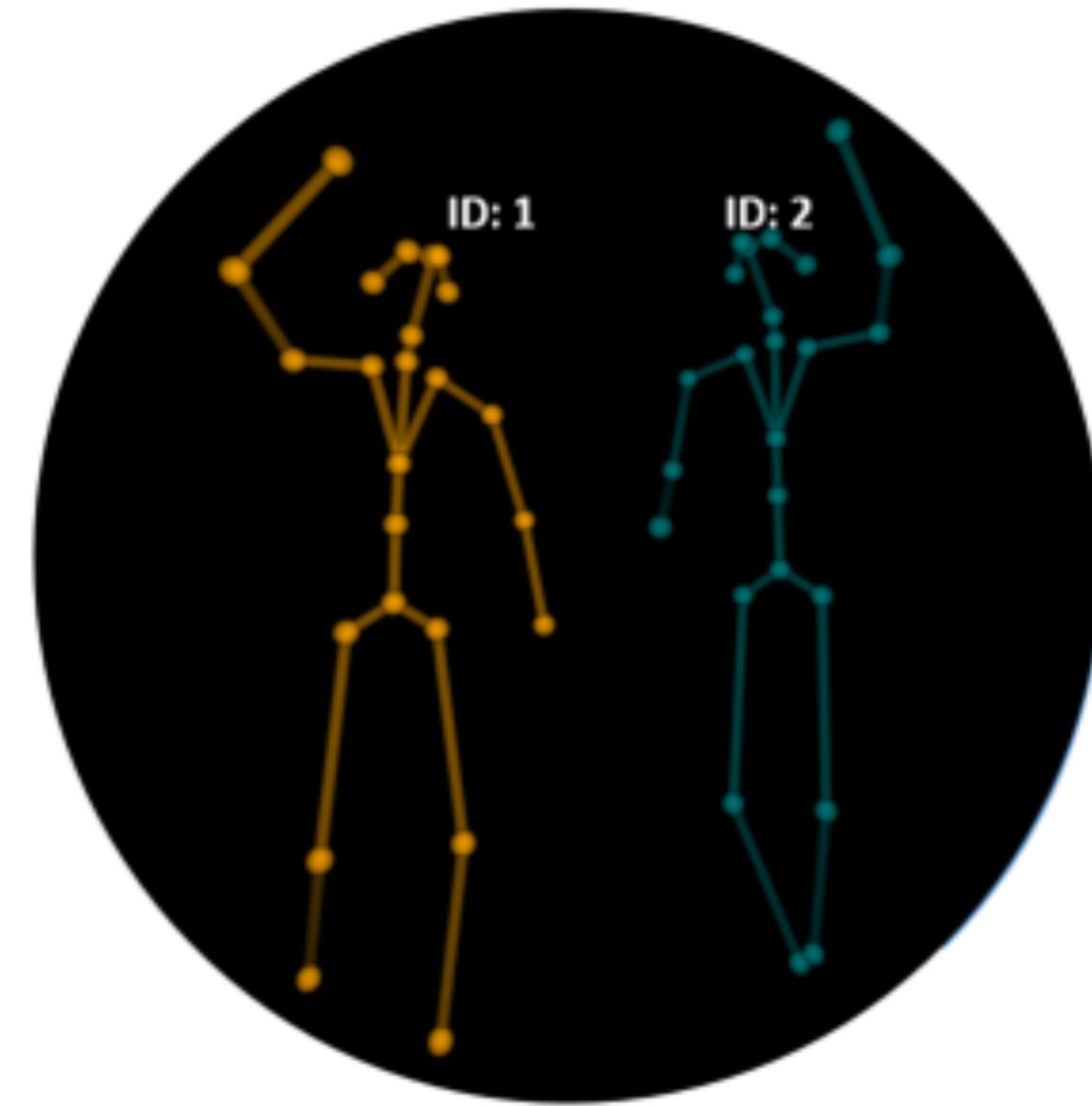
Azure Kinect DK



Azure Kinect DK



Azure Kinect DK



Kinect for Windows 2 (29/29 fps)

TouchDesigner 2021.11180: /Users/igwangy//Desktop/NewProject.1.toe

[WIKI] [FORUM] [TUTORIALS] [D] 60 FPS: 18 Realtime 7:30:19 1 Operators deleted.

pane Layout New Layout + / project1

Sep 25, 2017 — The face Right below the "calibrate"

V1.X Documentation - V1 Documentation: User interface Skeleton tracking - Documentation 4.4 OSC (Open Sound Control) More results from forum.n... community.troikatronix.co...

Motion Capture/Tr...

Oct 28, 2017 — Motion Capture Mate and I have managed outgoing port number in N...

community.troikatronix.co...

[ANSWERED] Kin it ... In terms of a comparison spatial trigger point calibration

Start: 1 End: 600 RStart: 1 REnd: 600 FPS: 60.0 Tempo: 120.0 ResetF: 1 T Sig: 4 4 TimeCode: 1 Beats: 00:00:08.55 536 Range Limit Loop Once

Time Path: /

Transform transform1

Transform Post

Group

Transform Order Scale Rotate Translate

Rotate Order Rx Ry Rz

Translate 0 0 0

Rotate 0 0 0

Scale 1 1 1

Pivot 0 0 0

Uniform Scale 1

Normals Maintain Length On

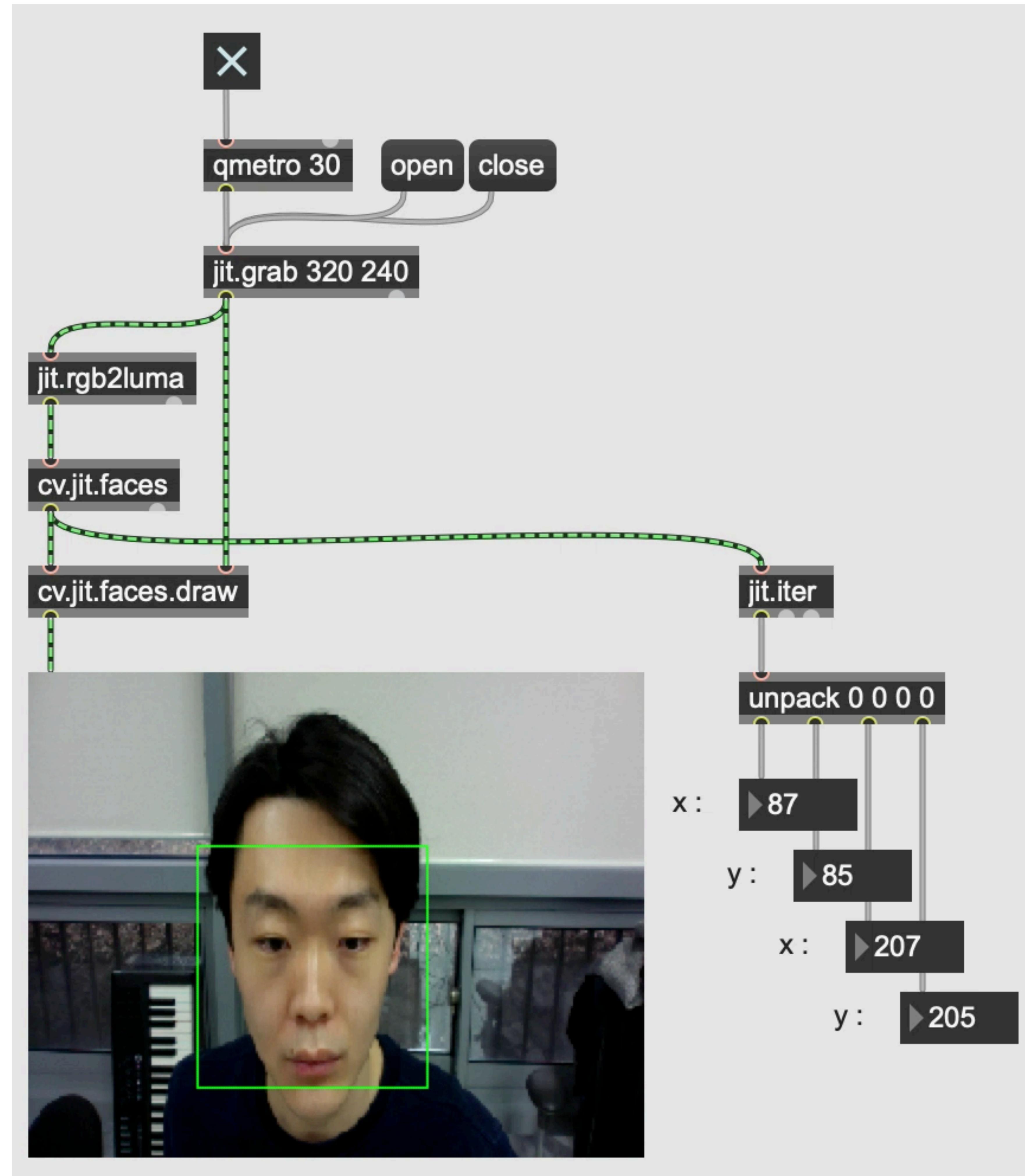
Look At

Up Vector 0 1 0

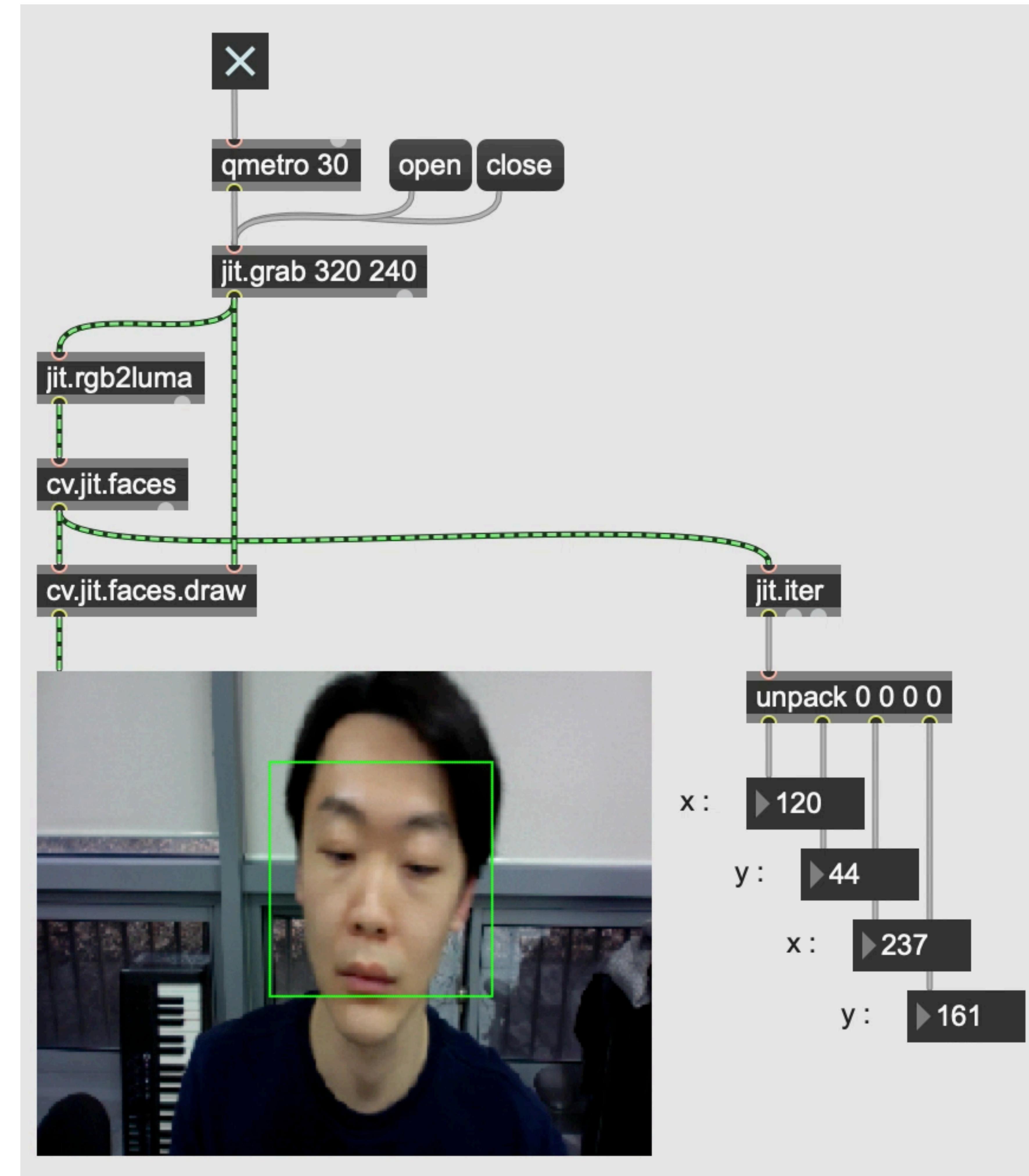
Forward Direction -Z

0.2764 Head1
1.275 Head2
1.823 Head3
-0.4303 Neck1
1.089 Neck2
1.705 Neck3
-0.491 Torso1
0.9082 Torso2
1.668 Torso3
-0.314 R_Shoulder1
1.051 R_Shoulder2
1.716 R_Shoulder3
-0.546 L_Shoulder1
1.128 L_Shoulder2
1.696 L_Shoulder3
-0.278 R_Elbow1
0.6795 R_Elbow2
1.687 R_Elbow3
-0.7512 L_Elbow1
0.8887 L_Elbow2
1.567 L_Elbow3
-0.252 R_Hand1
0.4902 R_Hand2
1.483 R_Hand3
-0.8469 L_Hand1
0.6712 L_Hand2
1.449 L_Hand3
-0.4686 R_Hip1
0.7018 R_Hip2
1.638 R_Hip3
-0.6351 L_Hip1
0.7589 L_Hip2
1.626 L_Hip3
-0.4082 R_Knee1
0.3794 R_Knee2
1.37 R_Knee3
-0.742 L_Knee1
0.3727 L_Knee2
1.396 L_Knee3
-0.8703 R_Foot1
0.4983 R_Foot2
1.497 R_Foot3
-0.8671 L_Foot1
0.2559 L_Foot2
1.7 L_Foot3
-0.2526 R_Palm1
0.4901 R_Palm2
1.484 R_Palm3
-0.8467 L_Palm1
0.6703 L_Palm2
1.449 L_Palm3

Computer Vision



Computer Vision



Computer Vision

cv.jit.shift: track an image area

Source: Movie File
File: Tennis-ba...
or drop file here
Rate: ▶ 1.
Enable resize Enable binary
▶ 320 ▶ 240 Size ▶ 50 Threshold
Enable rgb2luma Invert

The cv.jit.shift object implements two closely-related algorithms for tracking a window in a greyscale image: MeanShift and CAMShift.

In MeanShift, a starting window is defined and the image centroid (see cv.jit.centroids) is computed inside this window. The window is then shifted so that it is centered on this centroid. This process is repeated until the window doesn't move.

CAMShift (Continually Adapting MeanShift) works similarly but the size and orientation is adjusted at each iteration.

In both cases, the result is that the window will tend to center on bright spots. This can be used to track blobs and works on greyscale and binary data.

jit.chromakey can be used to extract a given colour from the image, which is often done prior to calculating the Mean/CAMShift.

jit.rgb2luma

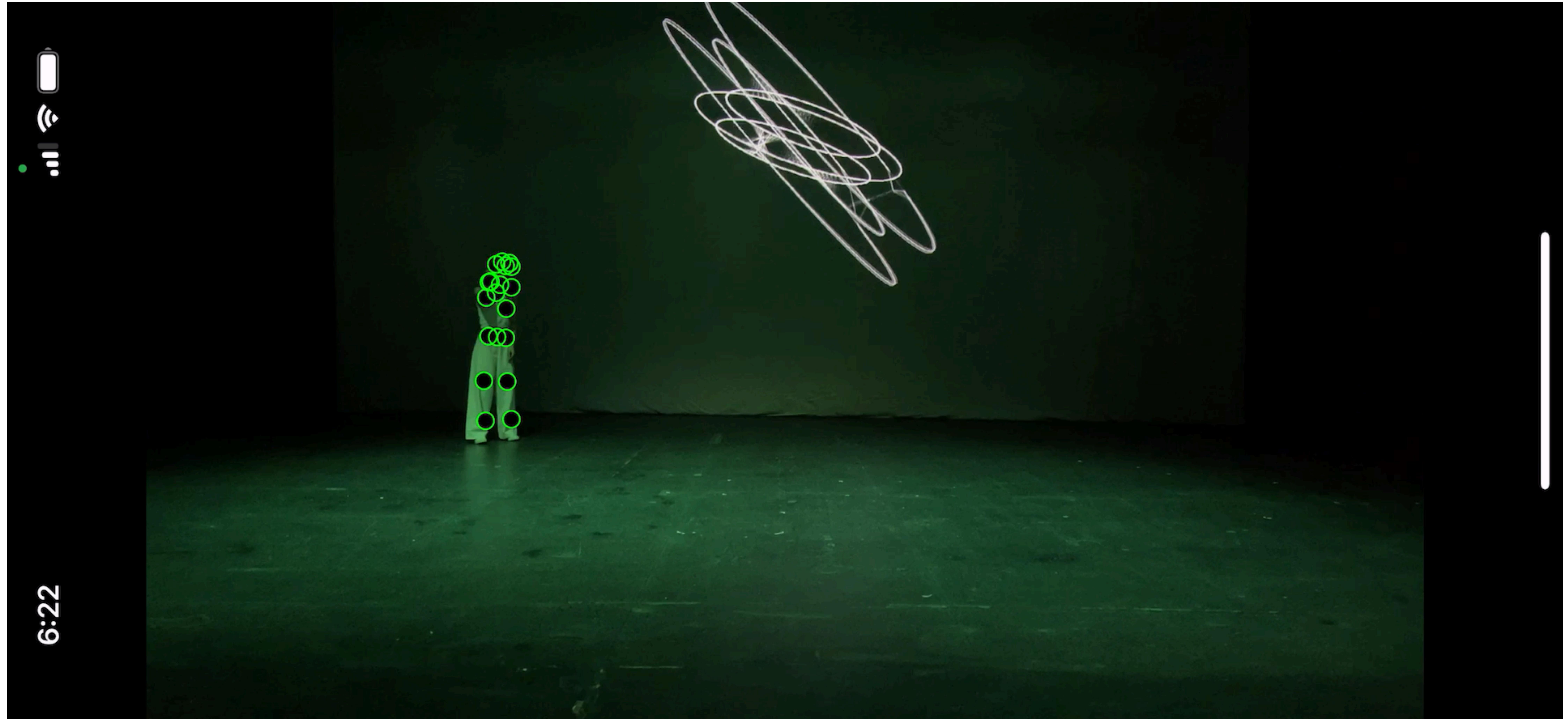
cv.jit.shift
mode: 0: MeanShift, 1: CAMShift
distance: ▶ 0. ▶ 2.
maxiters: ▶ 10
cv.jit.shift.draw
p make_rect
Use the "rect" attribute to set the search window's starting position.

Input: Single-plane char
Output: 4-element list: New window coordinates
8-element list: Vertices of rotated window
float: Mass of window

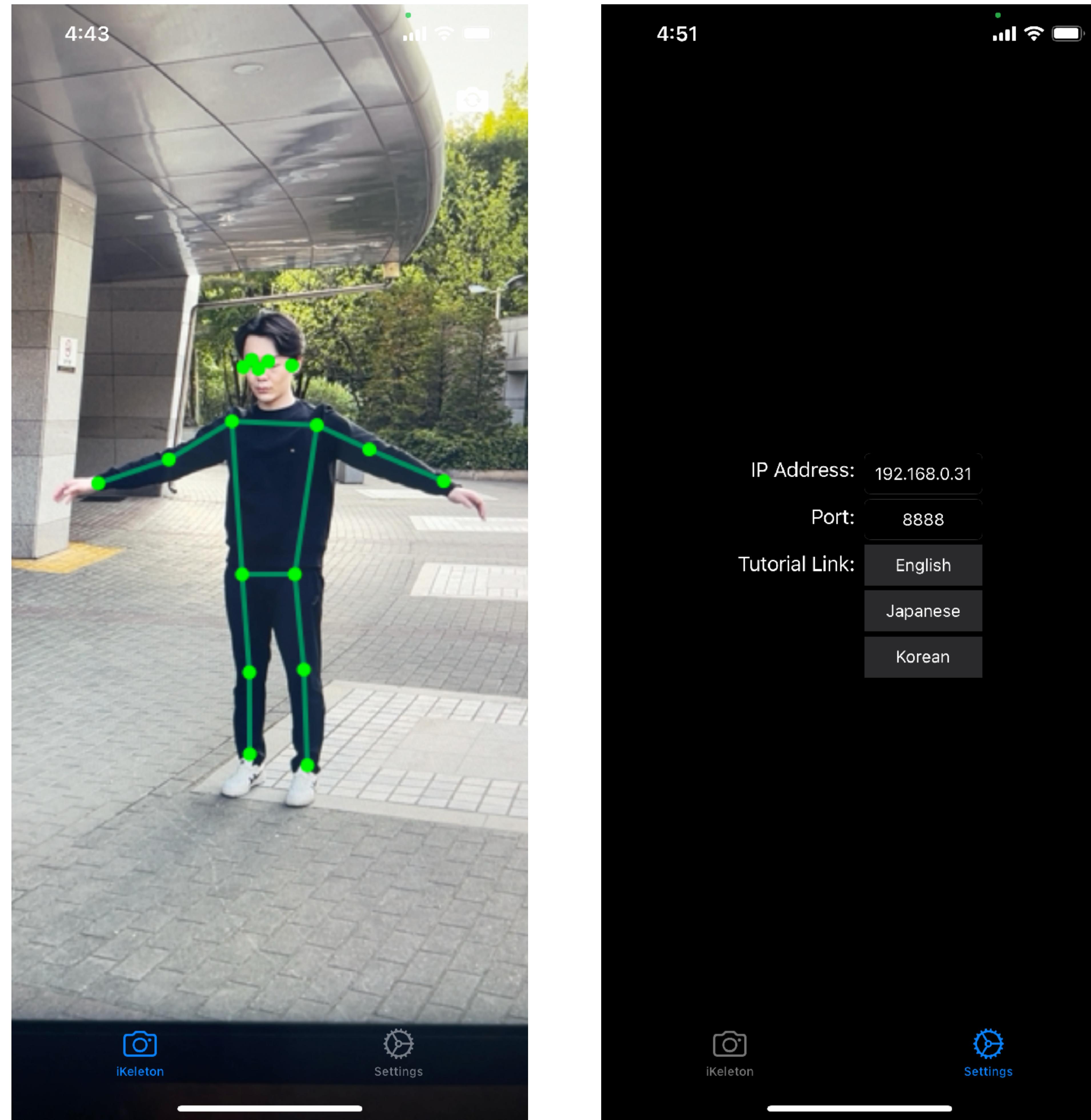
First, click on this pwindow to select a colour to track...
...then click and drag on this pwindow to set the search window's starting position.

By Jean-Marc Pelleter
jmp@jmpelleter.com
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Computer Vision & Machine Learning



Computer Vision & Machine Learning



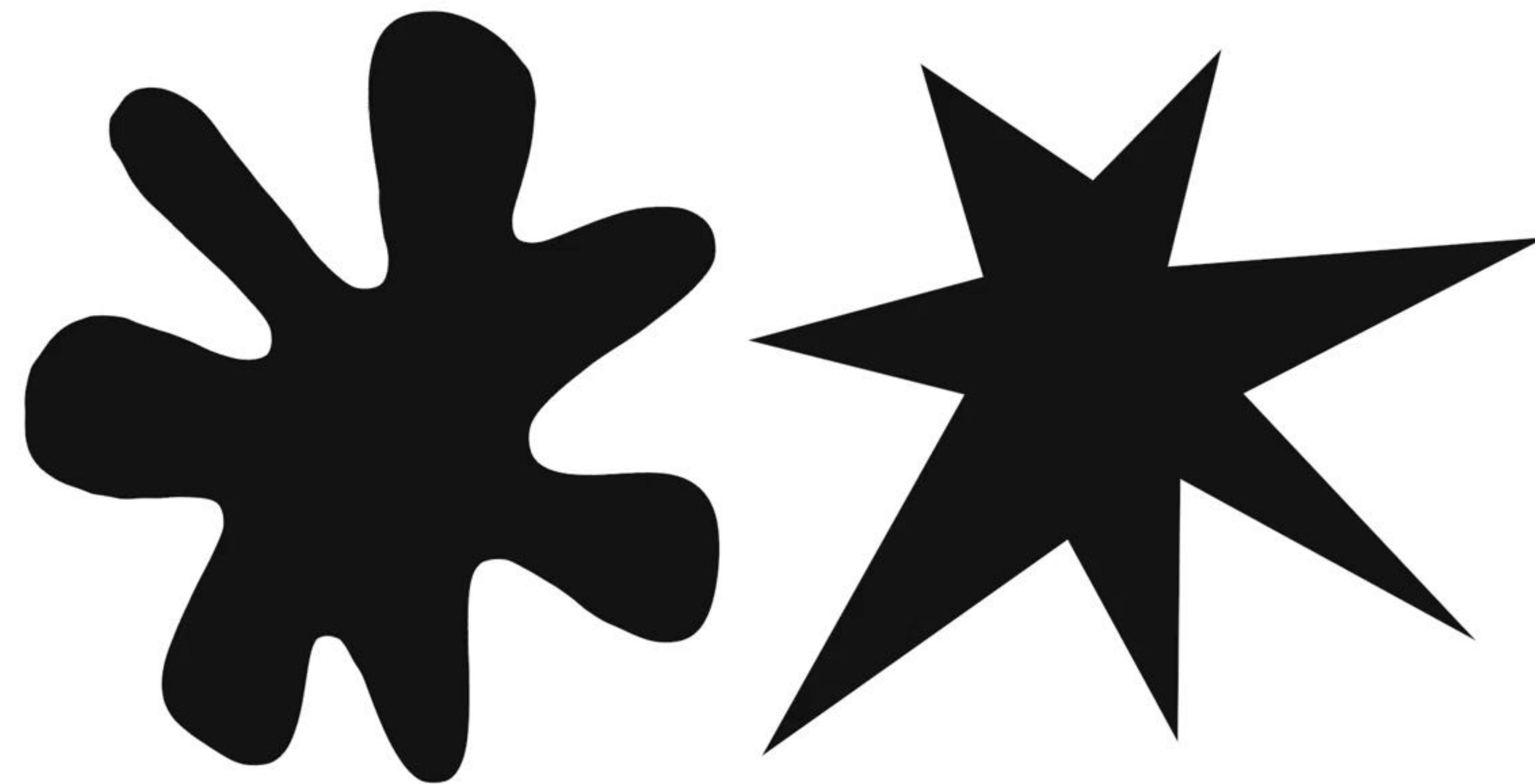
[Link](https://www.gwangyulee.com/2023/04/ios-ikeleton-osc.html)

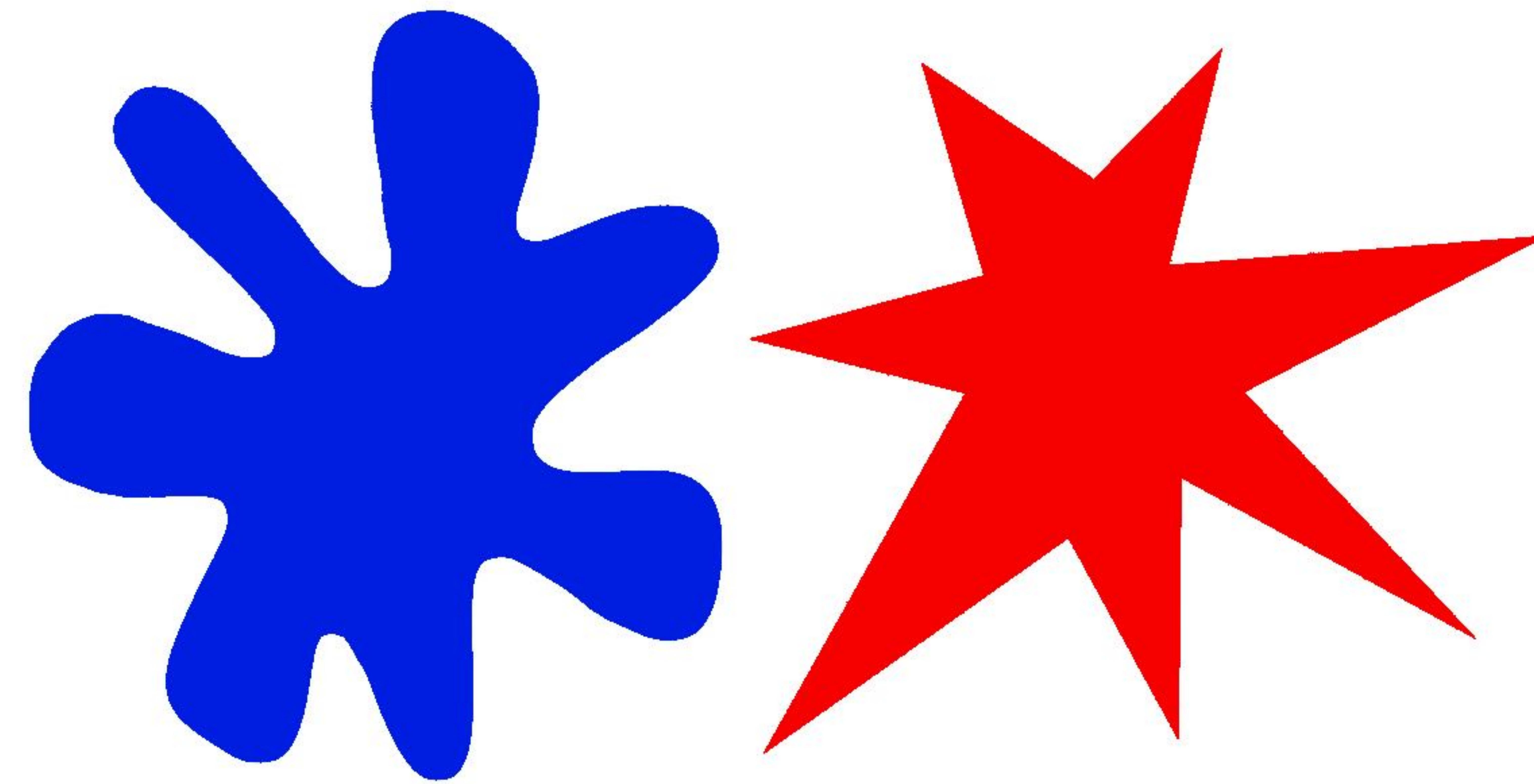
Mapping Motion To Music

Kick Drum vs Fade Out

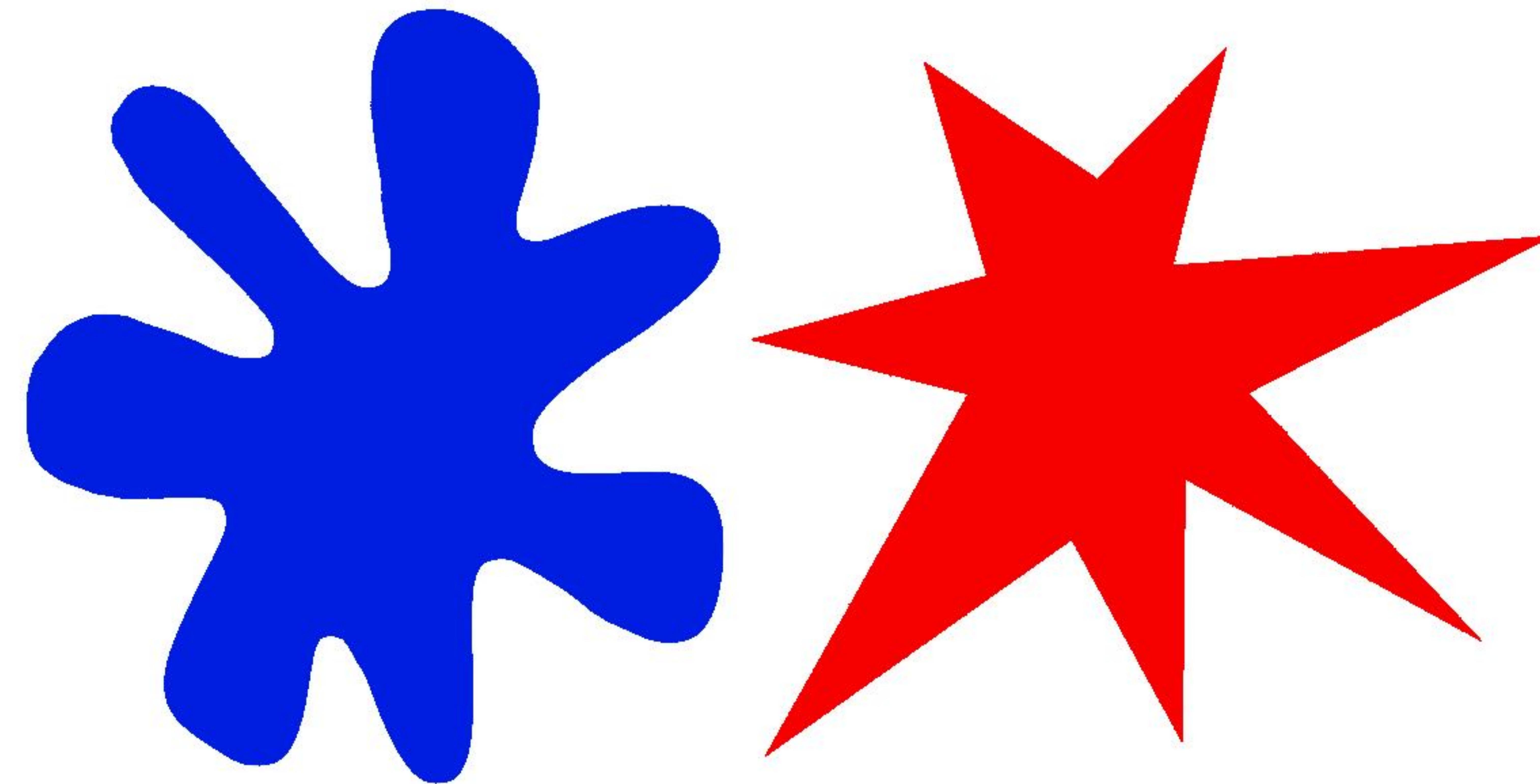


Kiki & Bouba

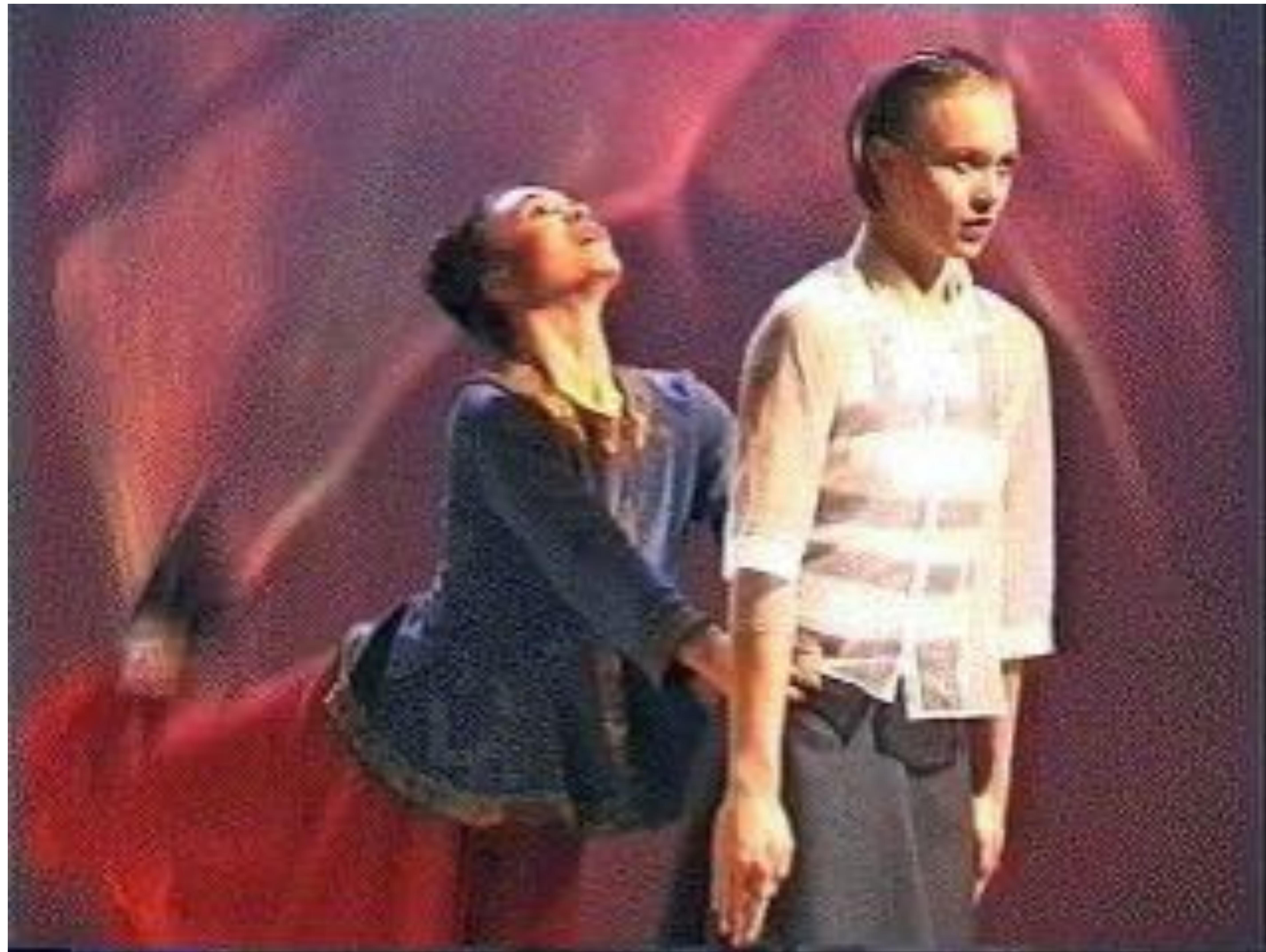




Bouba & Kiki



Sisters



<http://waynesiegel.dk/wp-content/uploads/2013/08/Sisters.pdf>

Pandora Project

Pandora Project

- Workshop
- Experiments
- Sketches

Liquid



Who



The Box



Fire



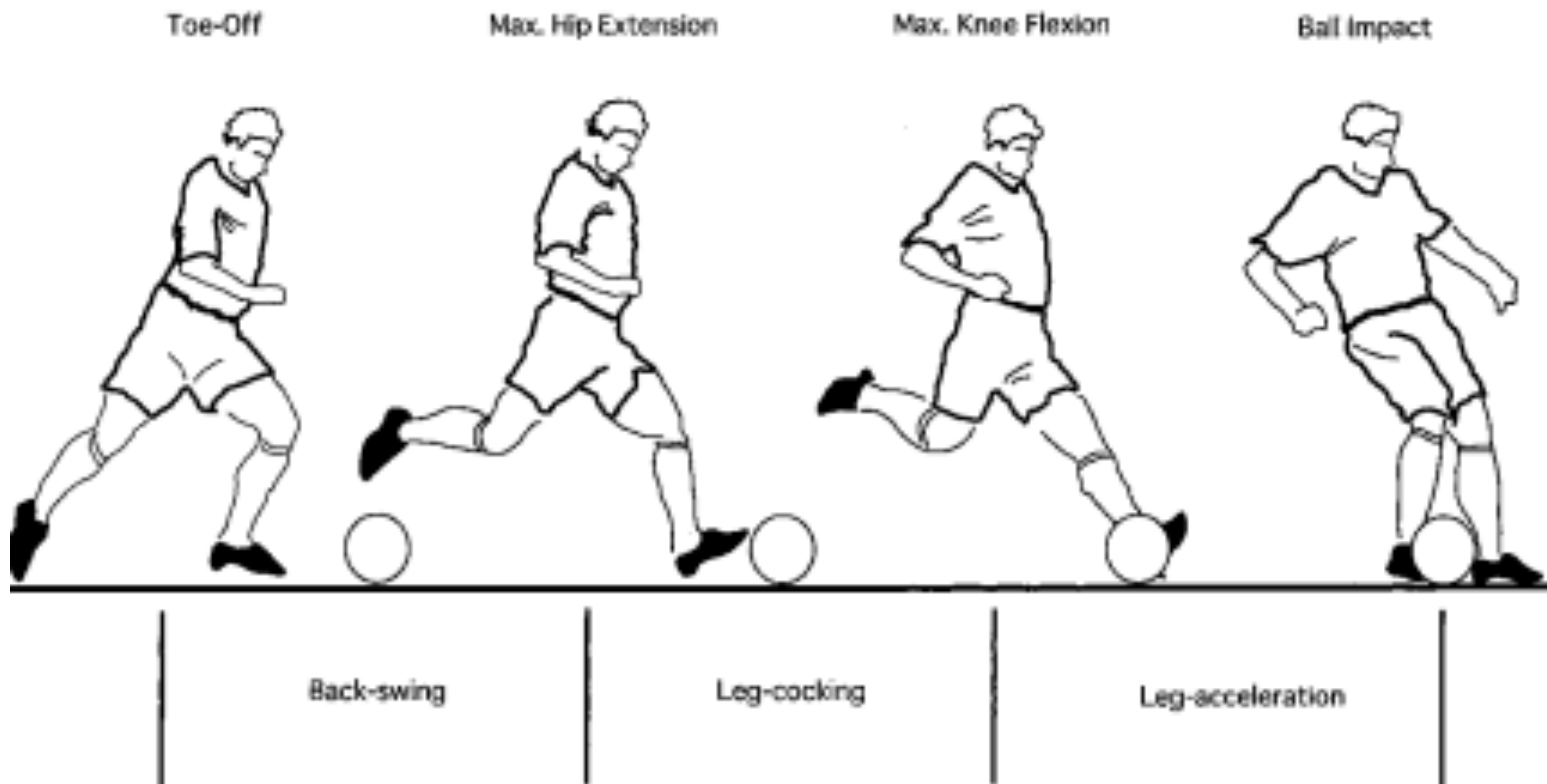
Circles





Gesture Interaction

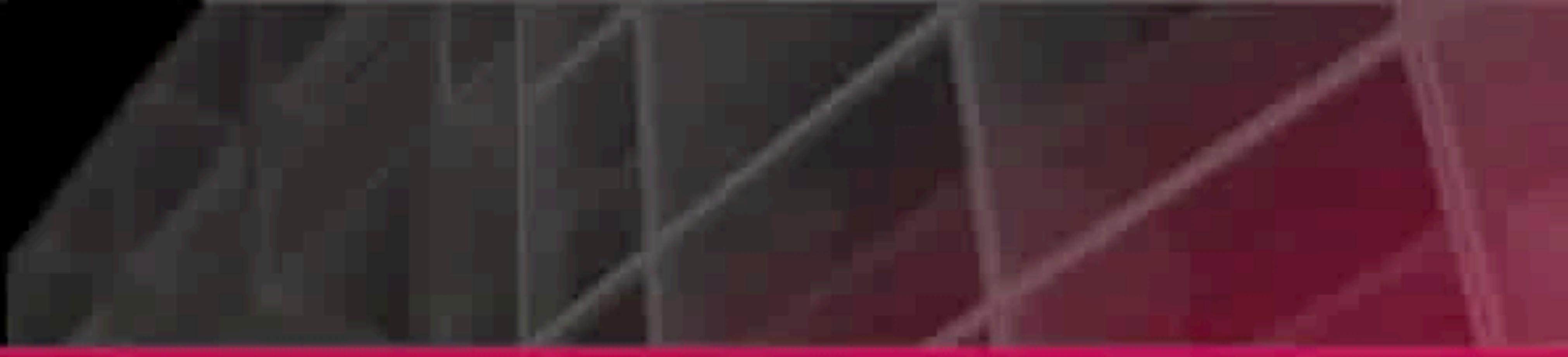
Gesture



Radio Baton



COMPUTER
HISTORY
MUSEUM



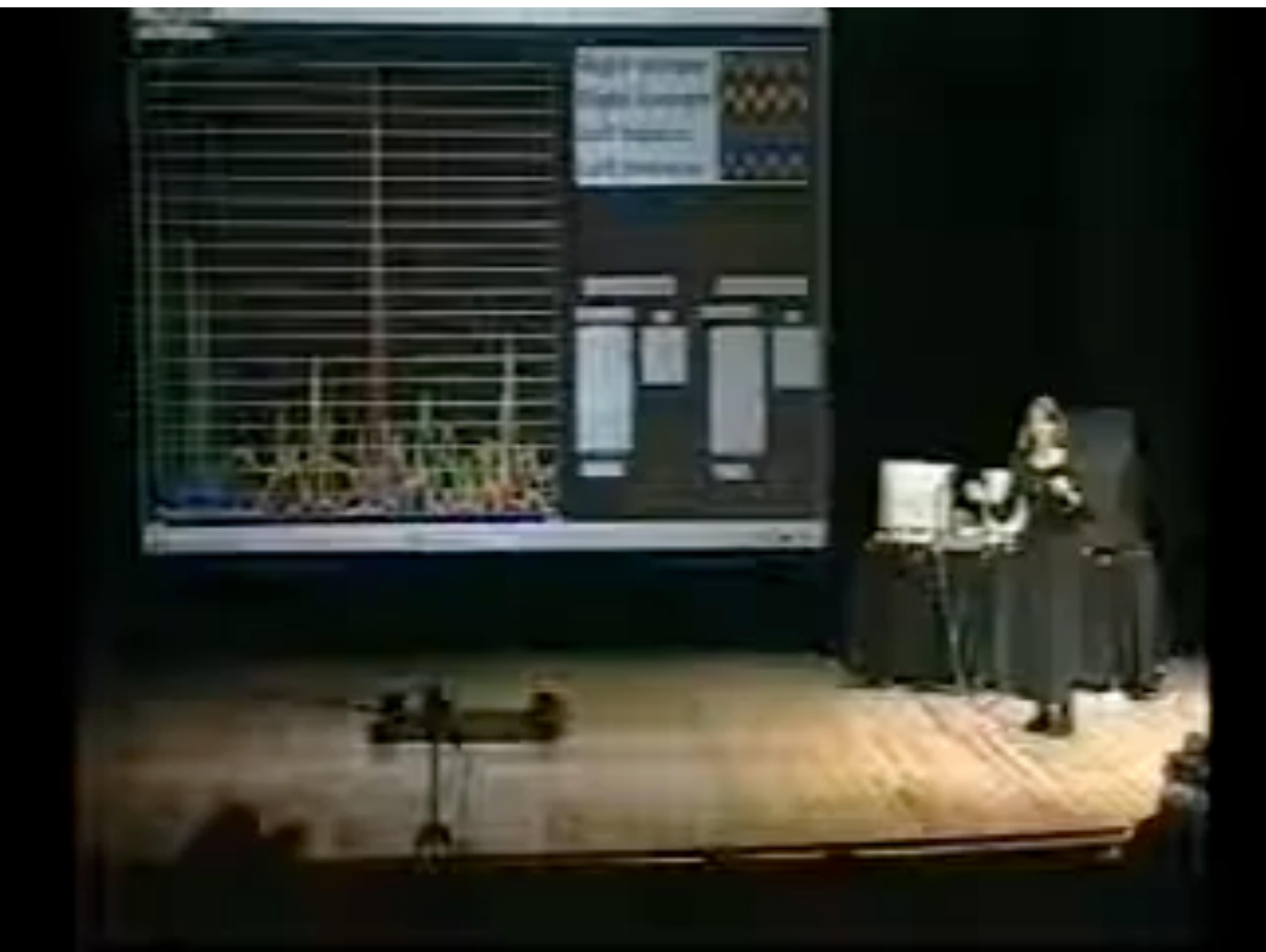
Max Mathews Radio Baton Demonstration

April 7, 2010
Running time 30:48

Where Computer History Lives

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Conductor Jacket



<https://youtu.be/Lnpij7MSRFYM?feature=shared>

UBS Virtual Maestro (aka “Conductor Hero”)



<https://www.youtube.com/watch?v=rX-bQR4bkqY>

Rationale for Selecting Wii Remote



<https://youtu.be/eJuIS2-wdfU?feature=shared>

Brain Opera: Digital Baton



<https://youtu.be/qAD5-uemdOQ?feature=sharedLink>

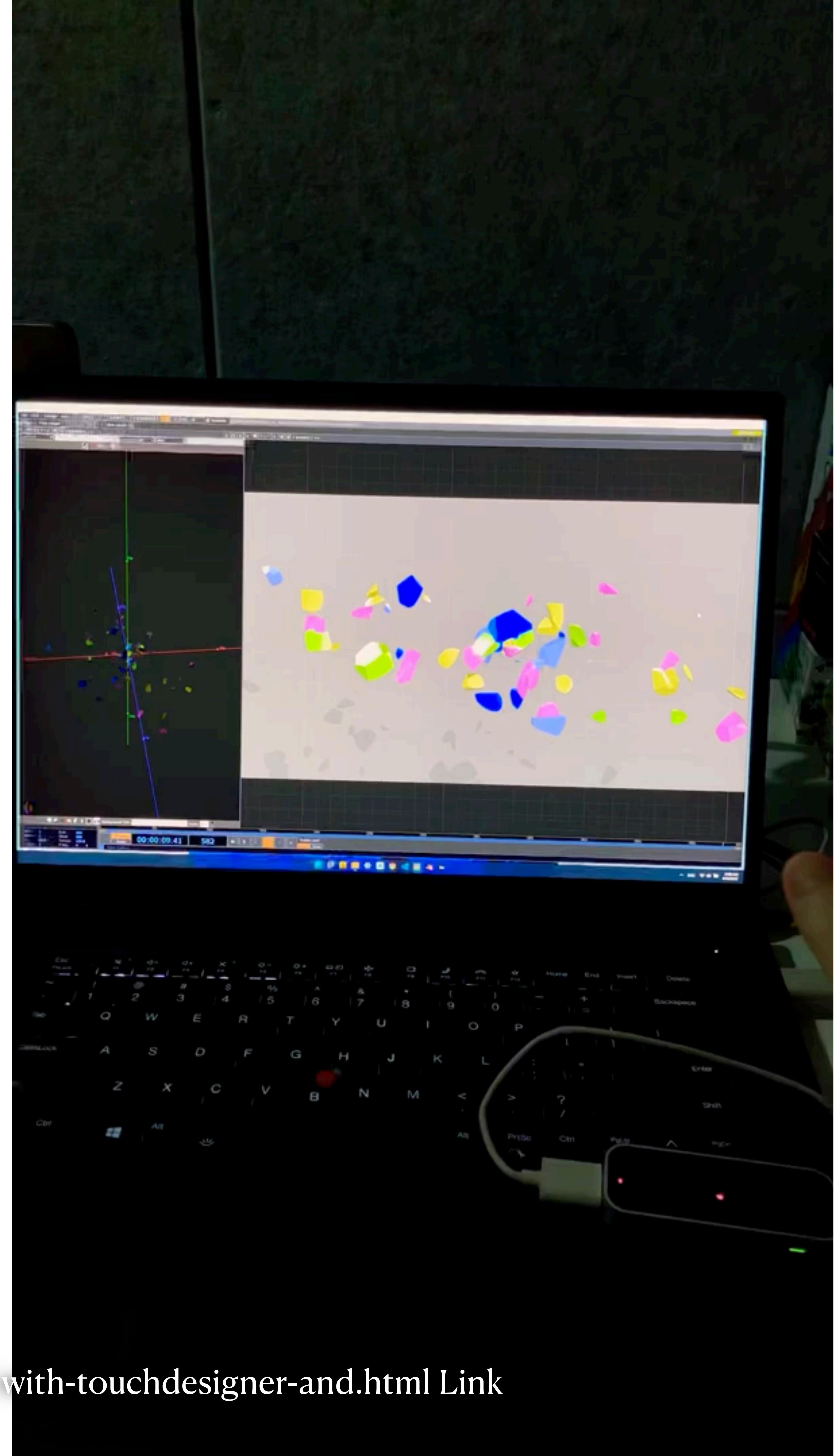
Brain Opera: Sensor Chair

<https://youtu.be/qAD5-uemdOQ?feature=sharedLink>

Leap Motion



<https://leap2.ultraleap.com/products/leap-motion-controller-2/>



[Link](https://www.gwangyulee.com/2022/04/destroyed-sphere-with-touchdesigner-and.html)





Machine Learning

