

TECH 1711 - Mixed Reality Studio

A person wearing a dark suit and a red and black striped tie is holding a glowing red book with yellow stitching. The background is a dark blue space with stars.

New Class
(Be Ready for Changes)

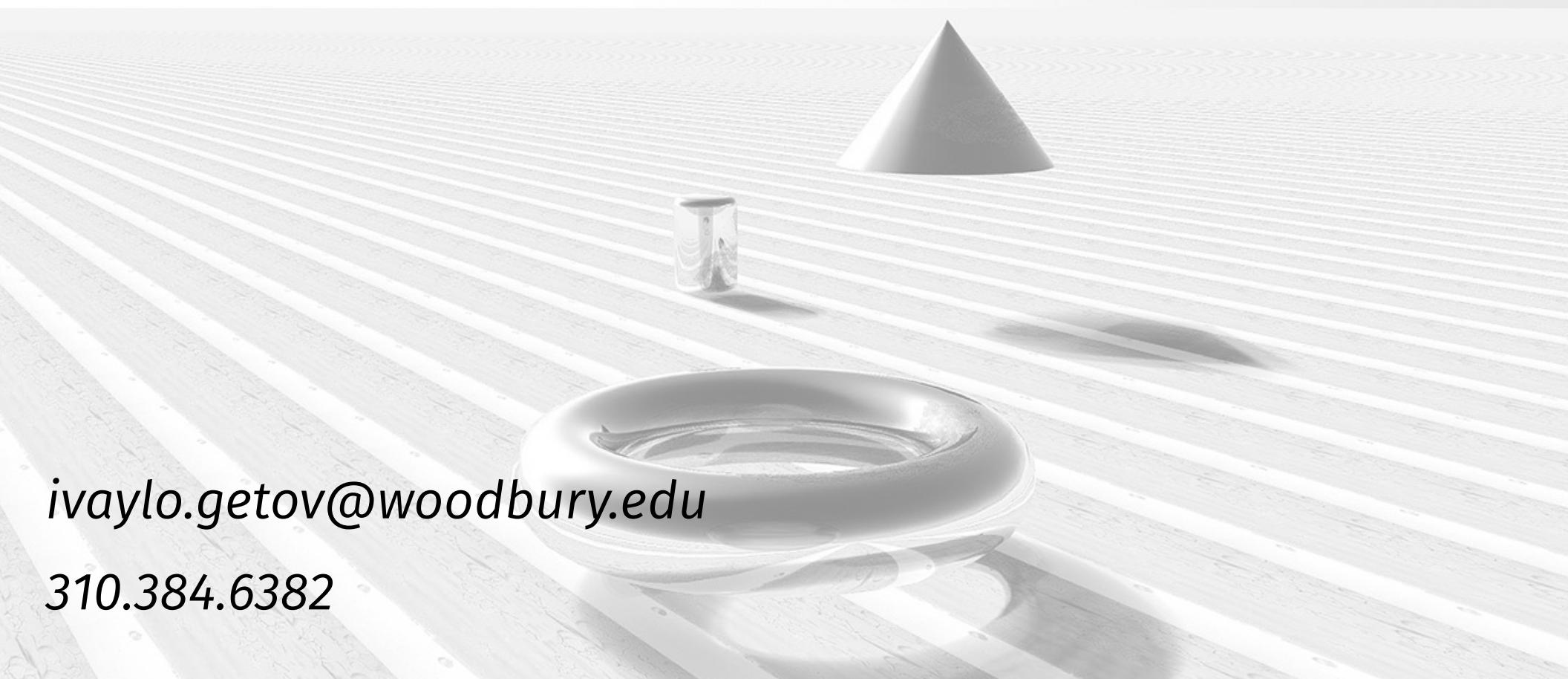
Most Up-to-date Syllabus:

<https://github.com/ivaylopg/MixedRealityStudio>

Contact Me

ivaylo.getov@woodbury.edu

310.384.6382

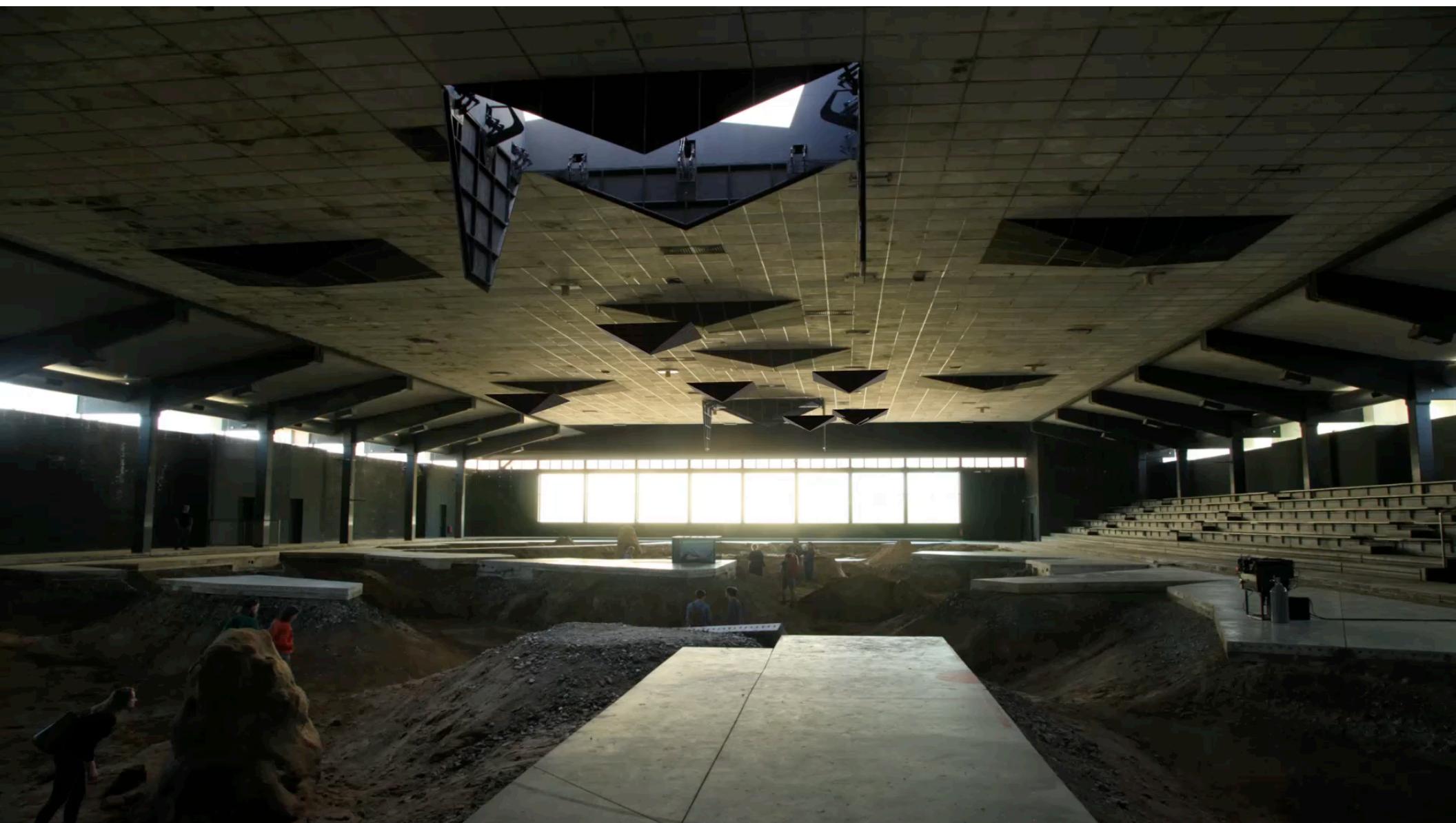


About me

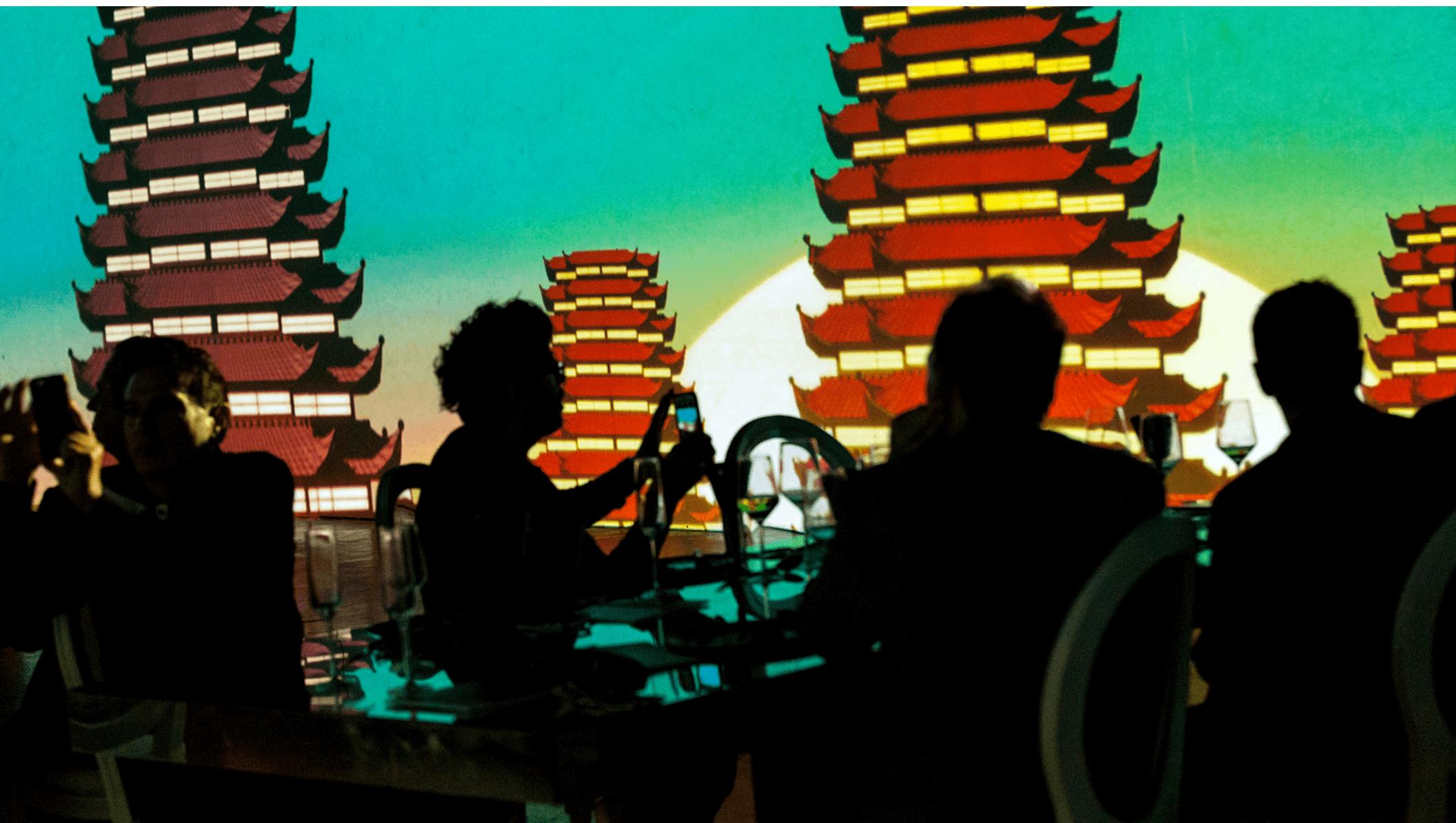




Luxloop







16:59:37

GPU usage: 38%

56
fps

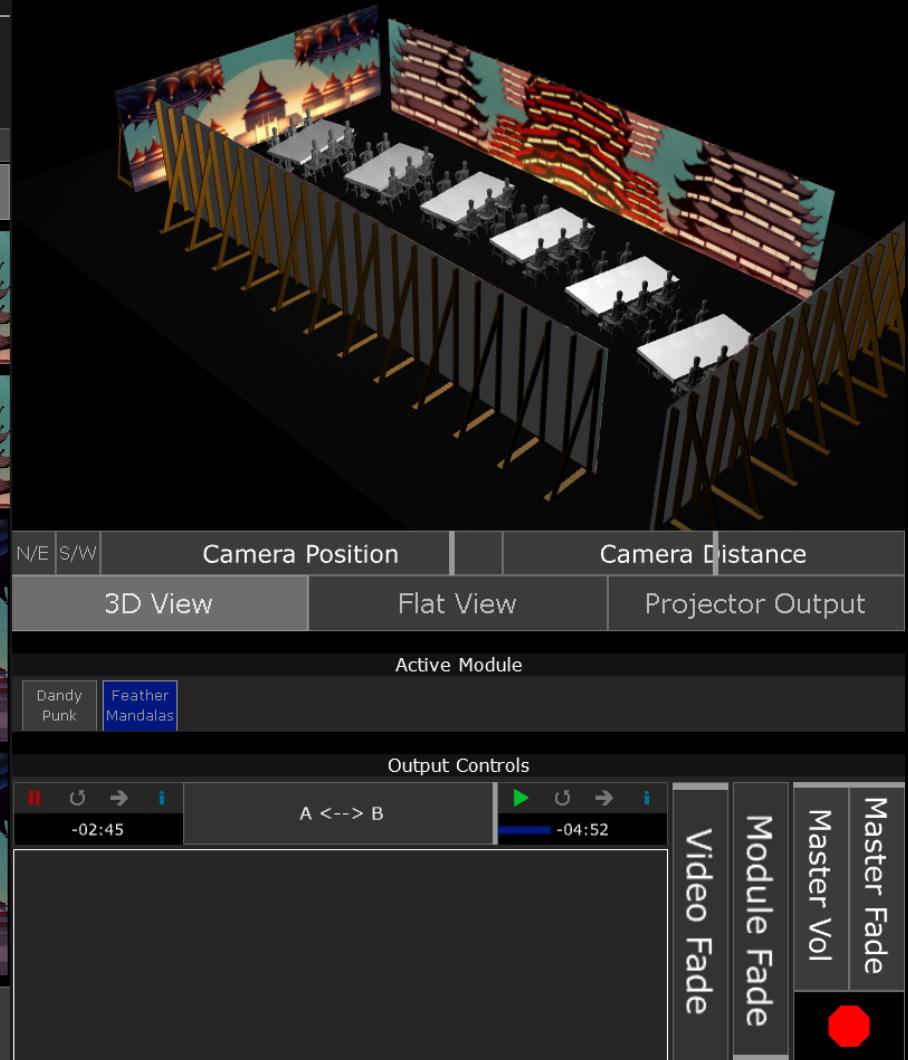
16

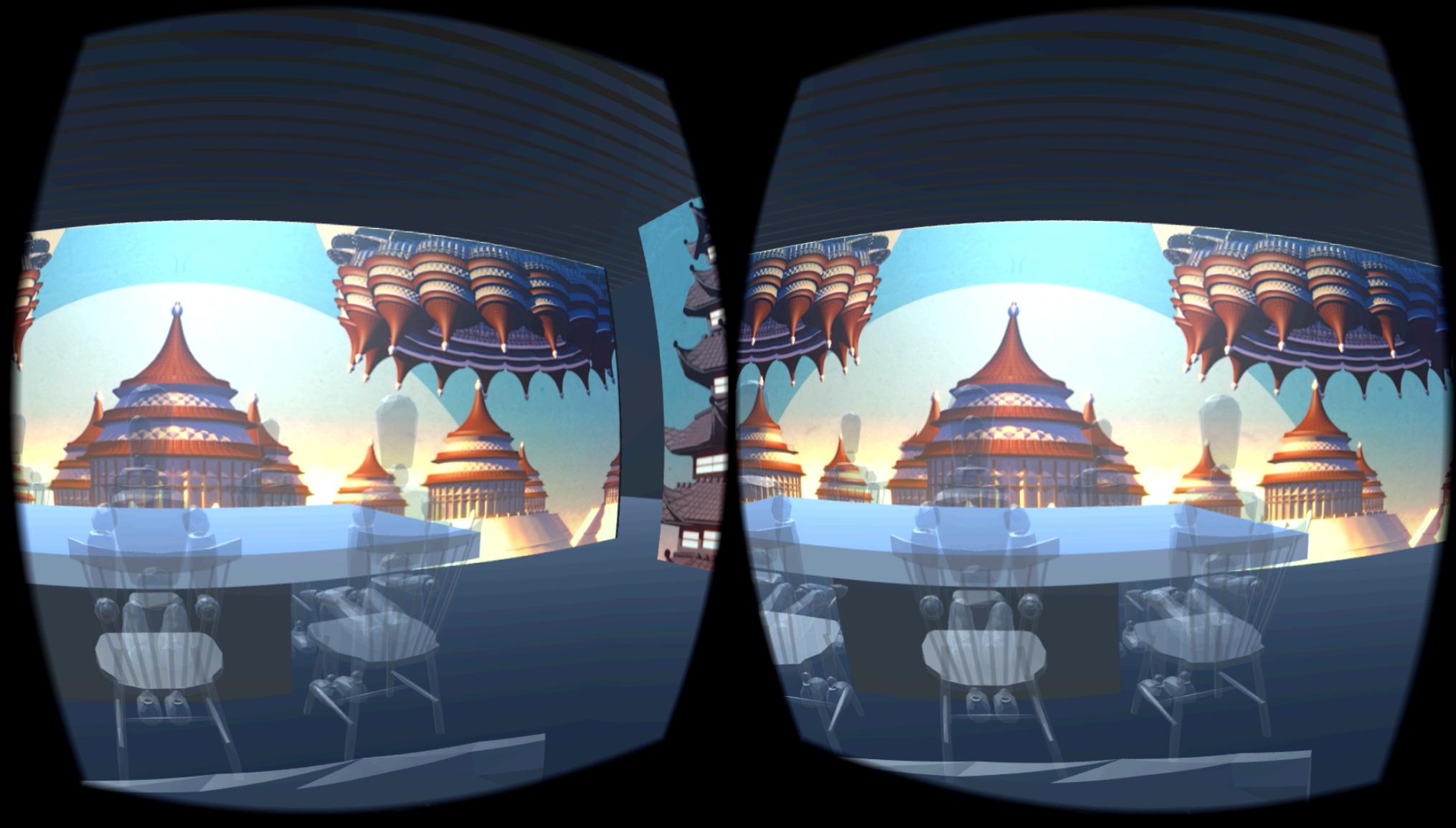
| | | |
|------------|------------|------------------|
| Video Cues | Dandy Punk | Feather Mandalas |
|------------|------------|------------------|

East: E:/EastWallVideos/42_TEMPBKALIEDSCOPELOOP_wide.mp4 loop 0
West: E:/EastWallVideos/42_TEMPBKALIEDSCOPELOOP_wide.mp4 0
North: F:/NorthWallVideos/42_TEMP_LOOP_short.mp4 adv 0
South: F:/NorthWallVideos/42_TEMP_LOOP_short.mp4 0

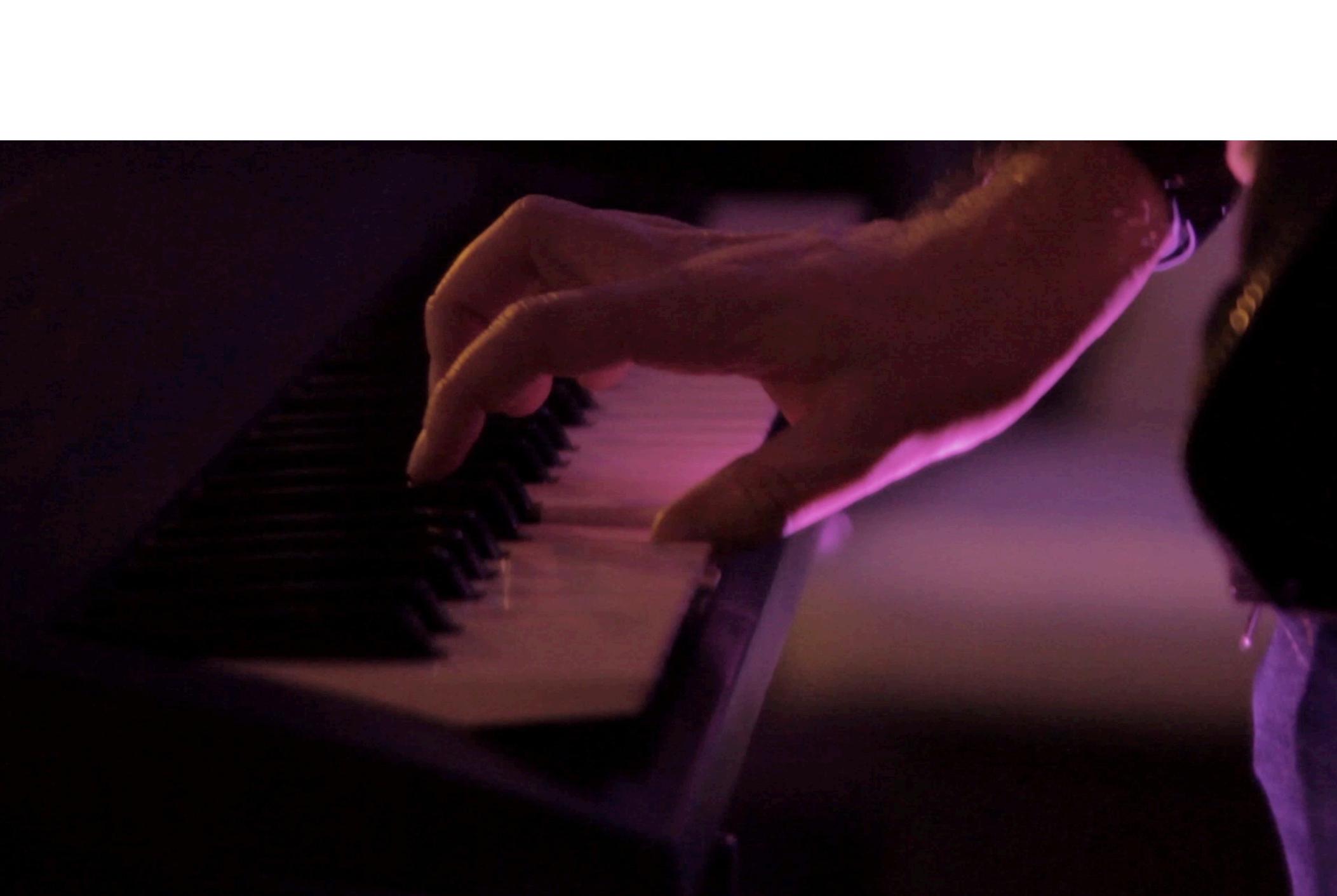
R + |

| | A | B |
|---------------|---|---|
| Play on Load | | |
| Play A | | |
| Play B | | |
| Restart Both | | |
| Restart 'A' | | |
| Restart 'B' | | |
| Load Into 'B' | | |











About YOU?

Experiential

Experimental

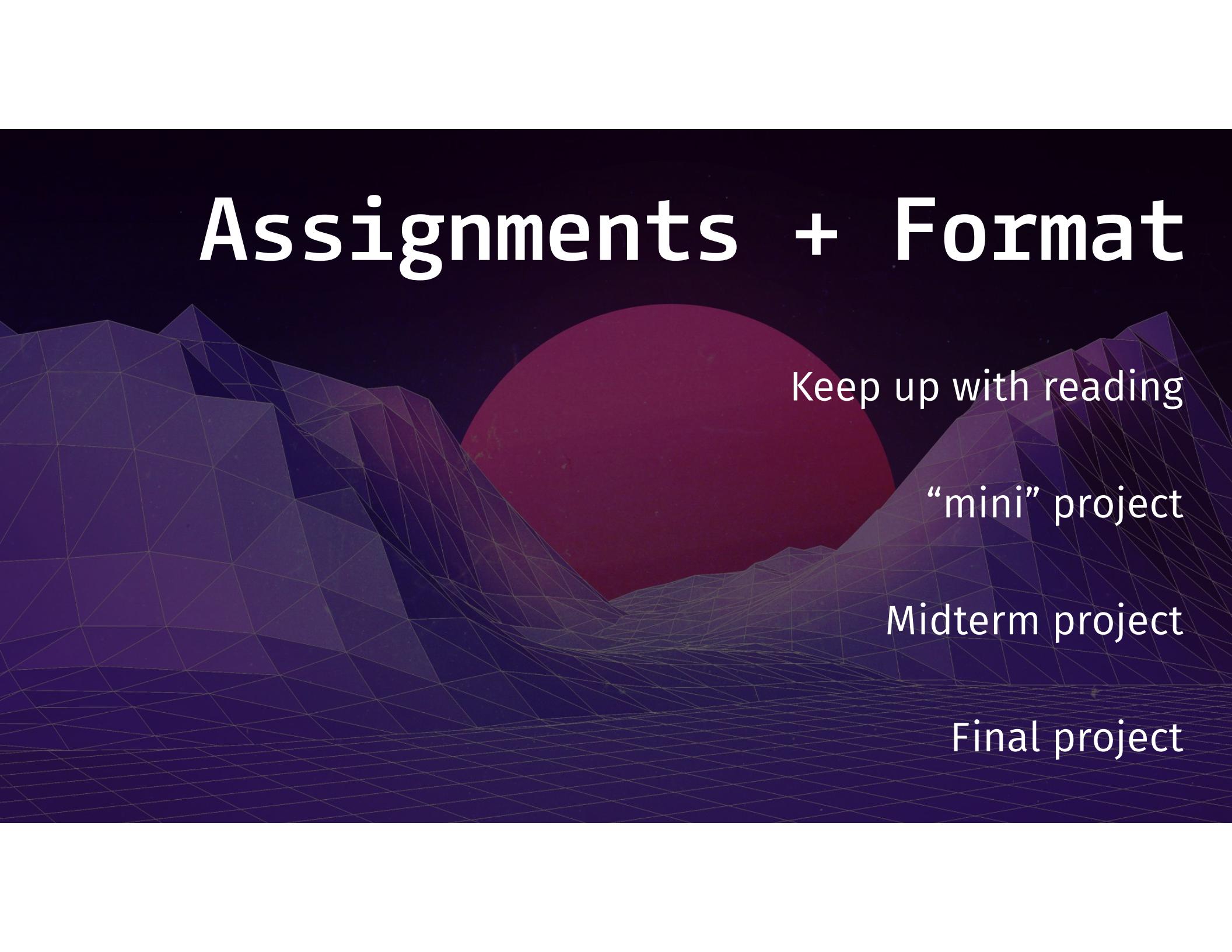
Test Lab

Expectations

Participation

Flexibility

Assignments + Format

The background features a stylized landscape with two large, dark purple mountain peaks on either side of a large, solid red circle representing the sun. The ground in the foreground is a light purple grid.

Keep up with reading

“mini” project

Midterm project

Final project

Goals

Specific Skills

- Completed multiple VR/AR Projects
- HTC Vive, Hololens
- Unity

Conceptual Proficiency

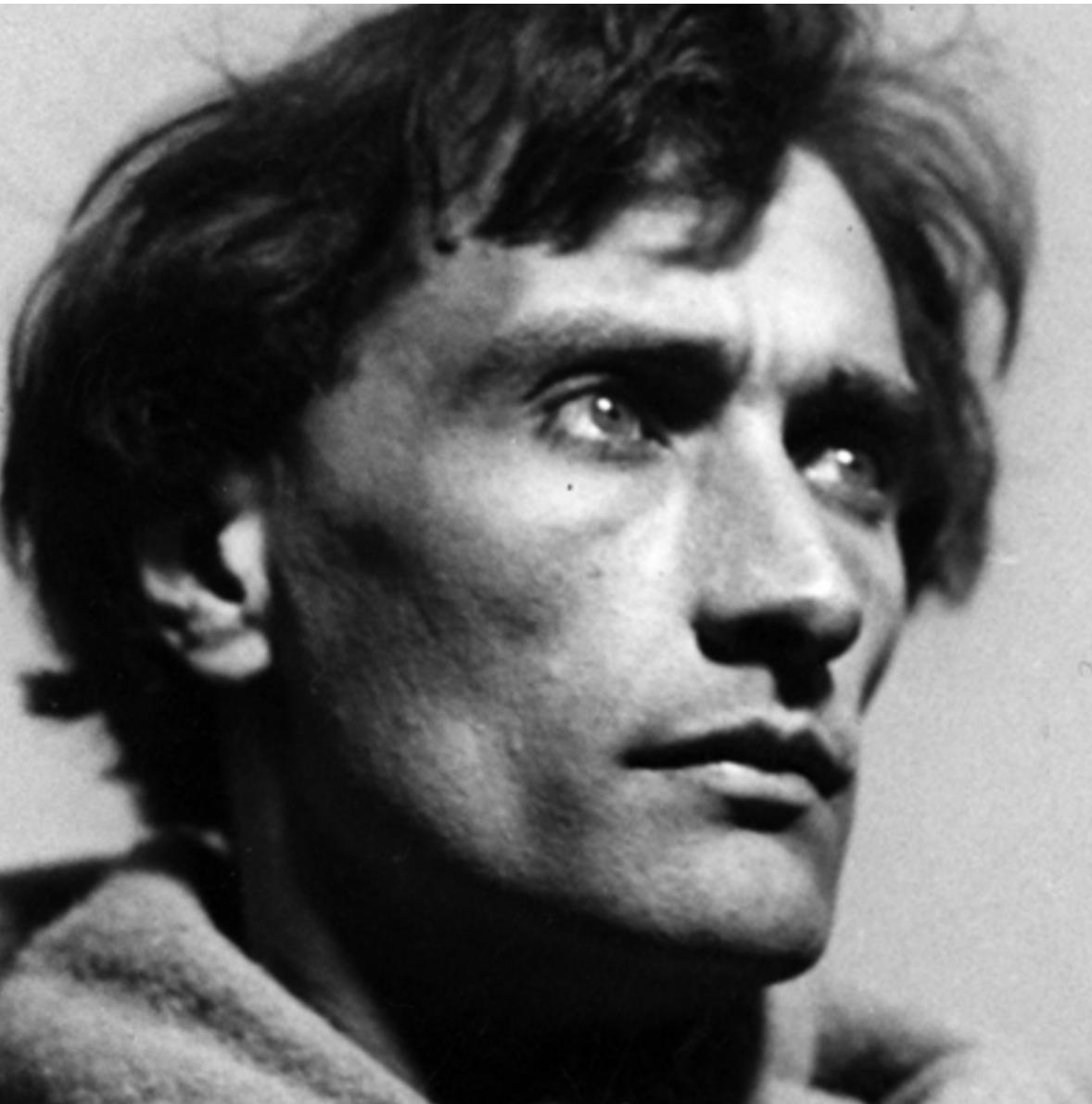
- New paradigms of design
- A new set of tools available to you



Let's Go!







*[T]he theater is a mirage....
And the principle of theater...
should be understood as the
expression of an identity...in
which the characters,
objects, images, and all that
constitutes the **virtual reality**
of the theater develops, and
the purely fictitious and
illusory world [is] evolved.*

What is AR/VR/MR?

Inducing targeted behavior in an organism by using artificial sensory stimulation, while the organism has little or no awareness of the interference.



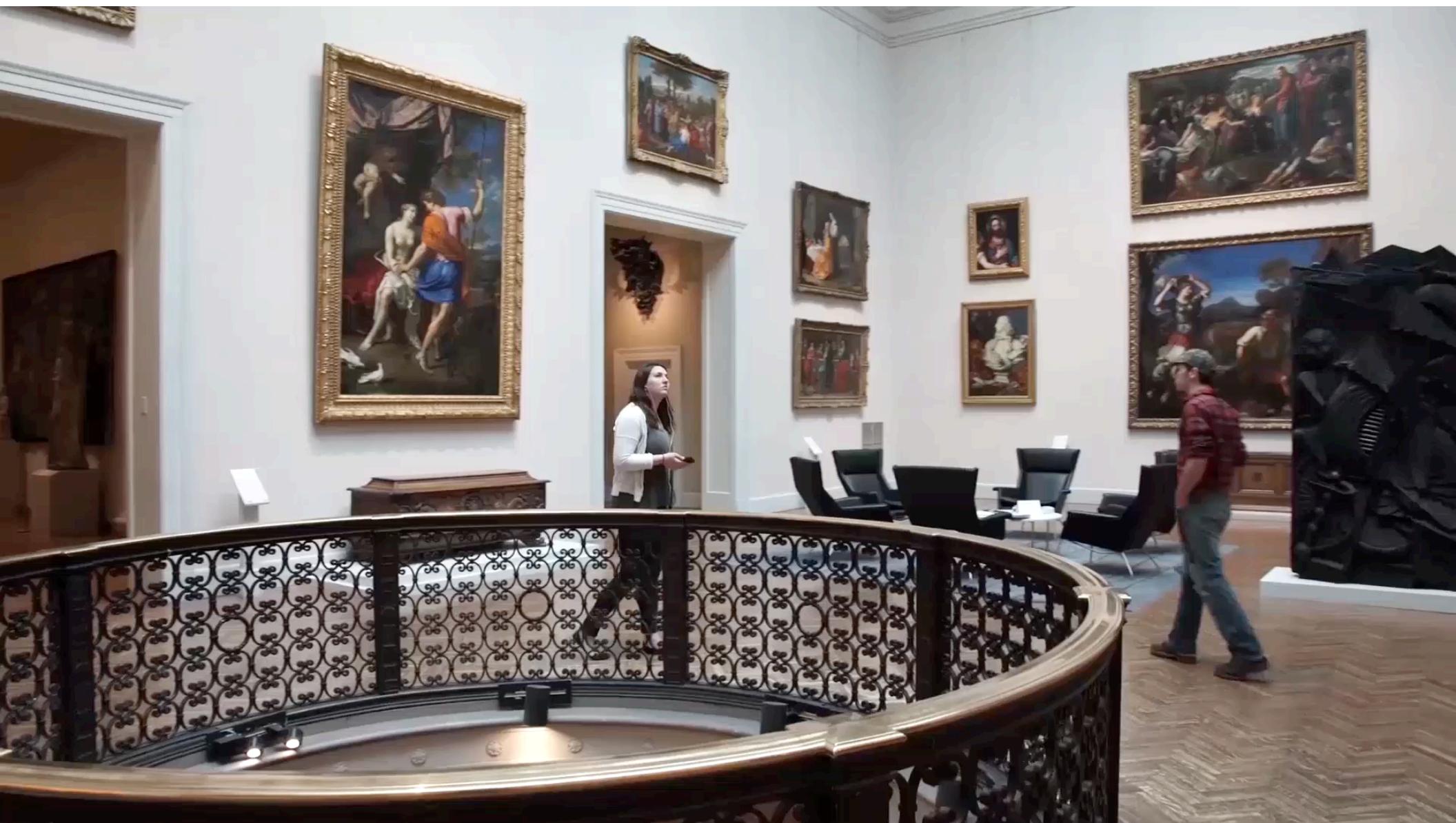
Do not attempt.











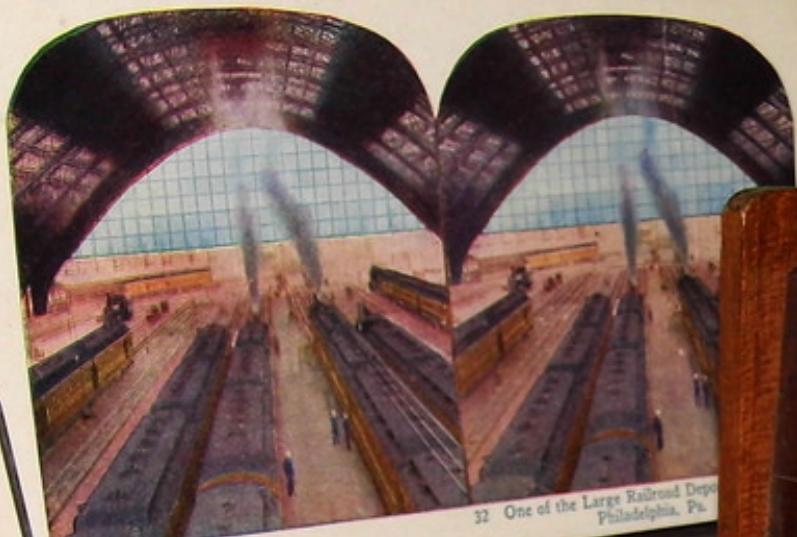


A dark auditorium with rows of red theater seats facing a brightly lit screen at the front. The screen displays a large, white, serif font definition of hypnosis.

Inducing targeted behavior in an organism by using artificial sensory stimulation, while the organism has little or no awareness of the interference.

A (Brief) History of VR/AR

sensorama

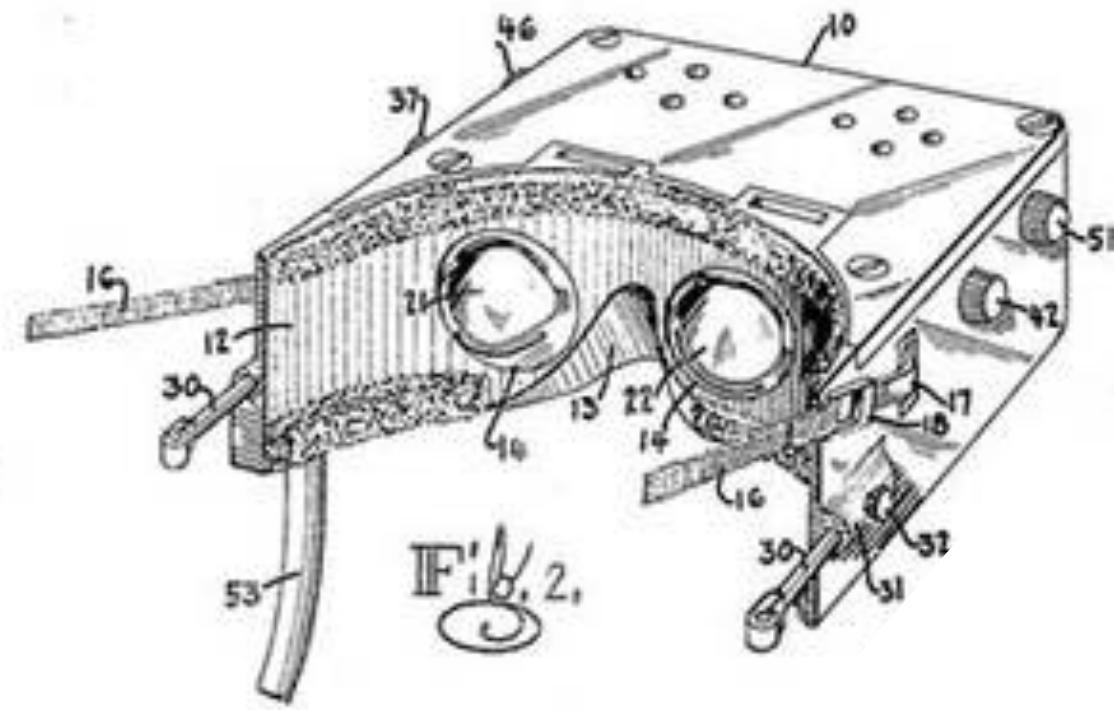


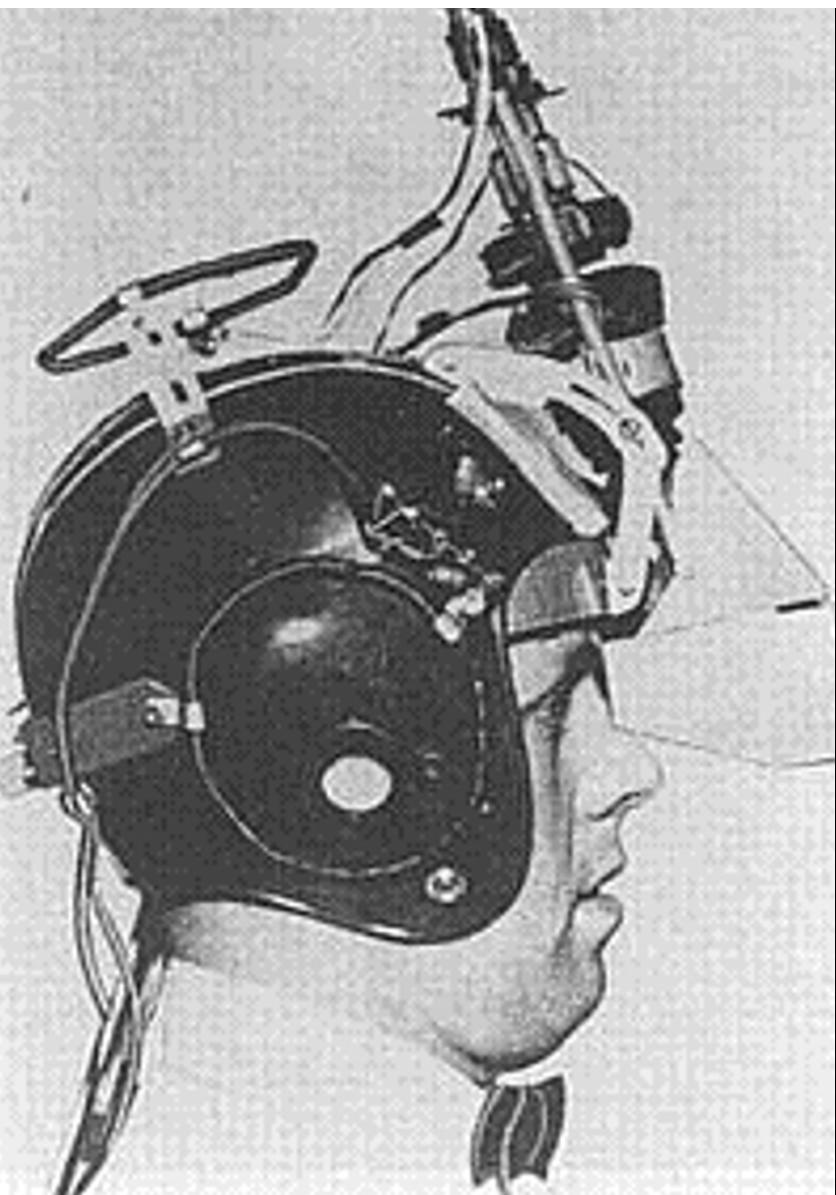
32 One of the Large Railroad Depo
Philadelphia, Pa.

1925. A. C. CO.









Philco HMD



A display connected to a digital computer gives us a chance to gain familiarity with concepts not realizable in the physical world. It is a looking glass into a mathematical wonderland.





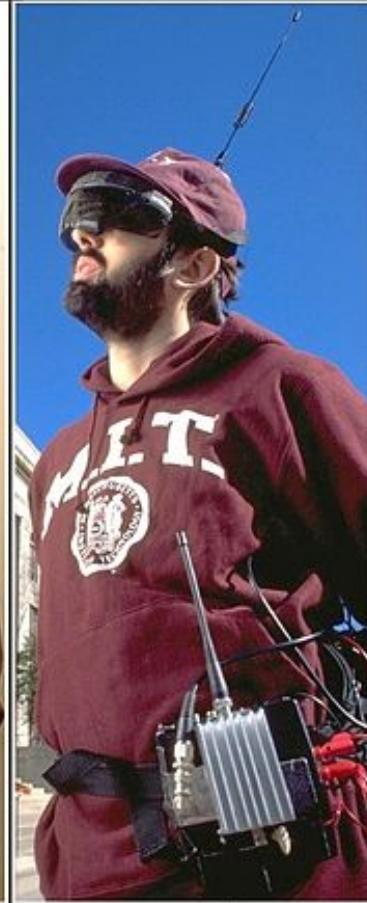
(a)
1980



(b)
Mid 1980s



(c)
Early 1990s



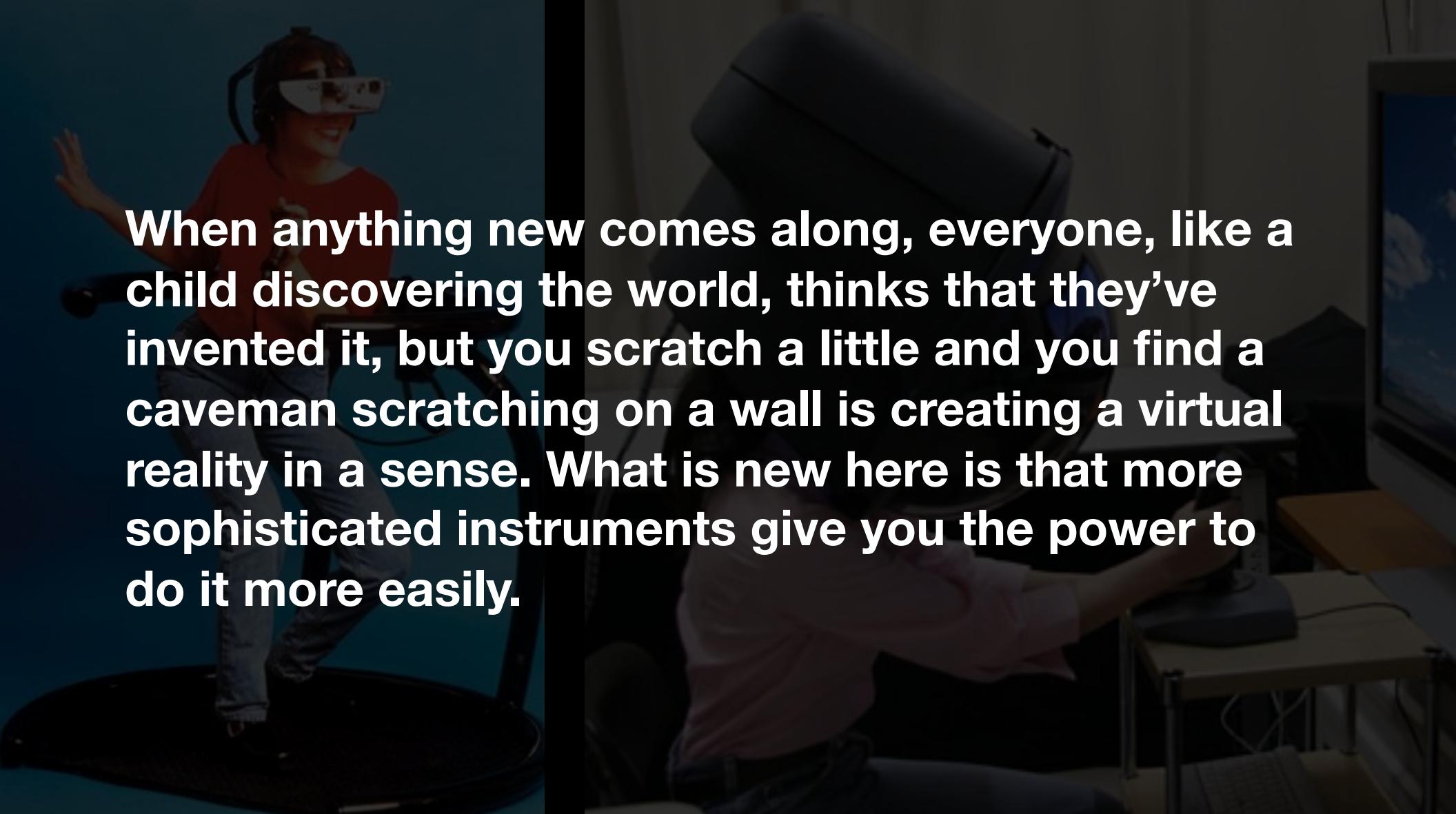
(d)
Mid 1990s



(e)
Late 1990s

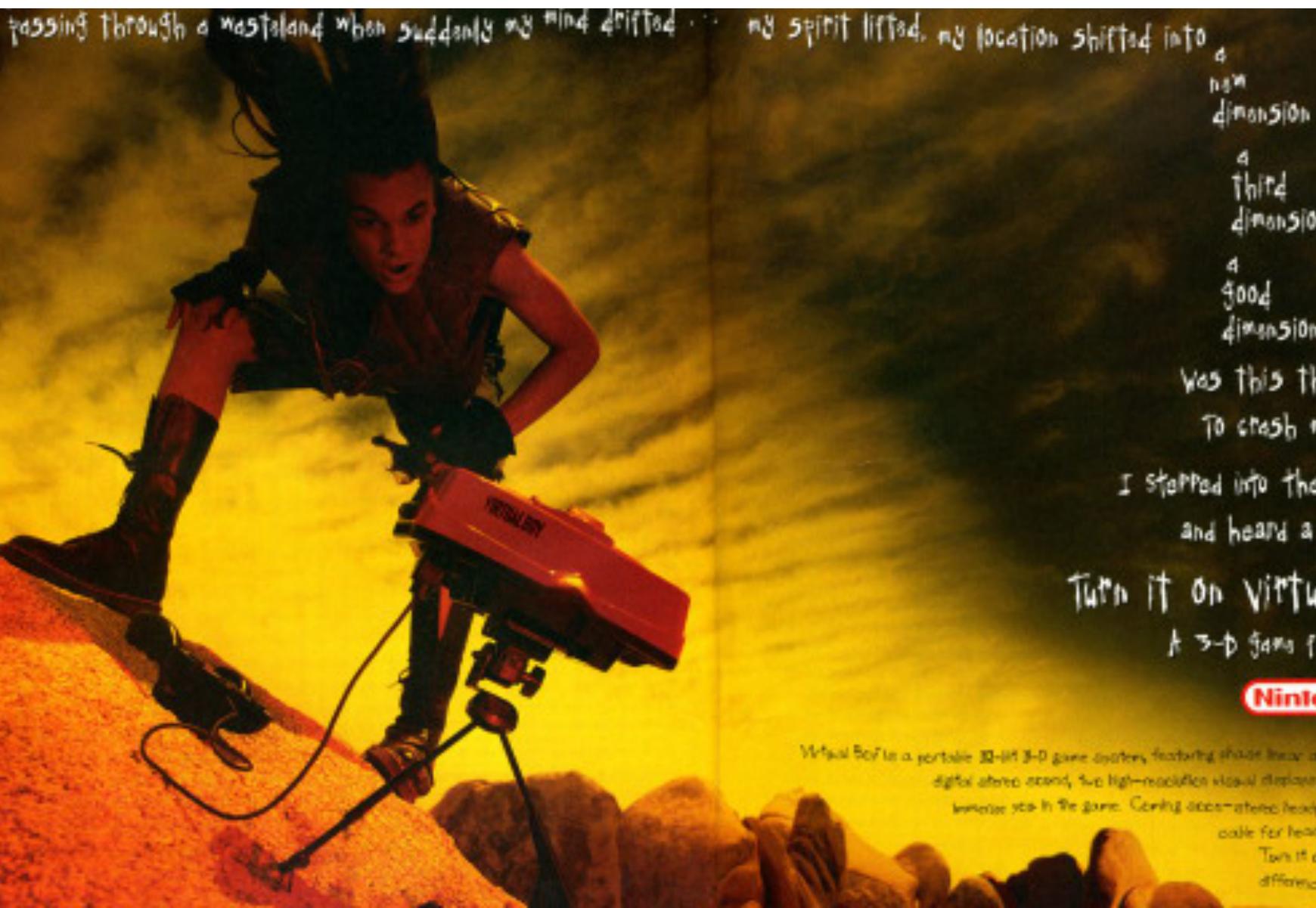






When anything new comes along, everyone, like a child discovering the world, thinks that they've invented it, but you scratch a little and you find a caveman scratching on a wall is creating a virtual reality in a sense. What is new here is that more sophisticated instruments give you the power to do it more easily.





... my spirit lifted, my location shifted into

4
new
dimension

4
Third
dimension

4
good
dimension.

Was this their intention?
To crash my dimension?

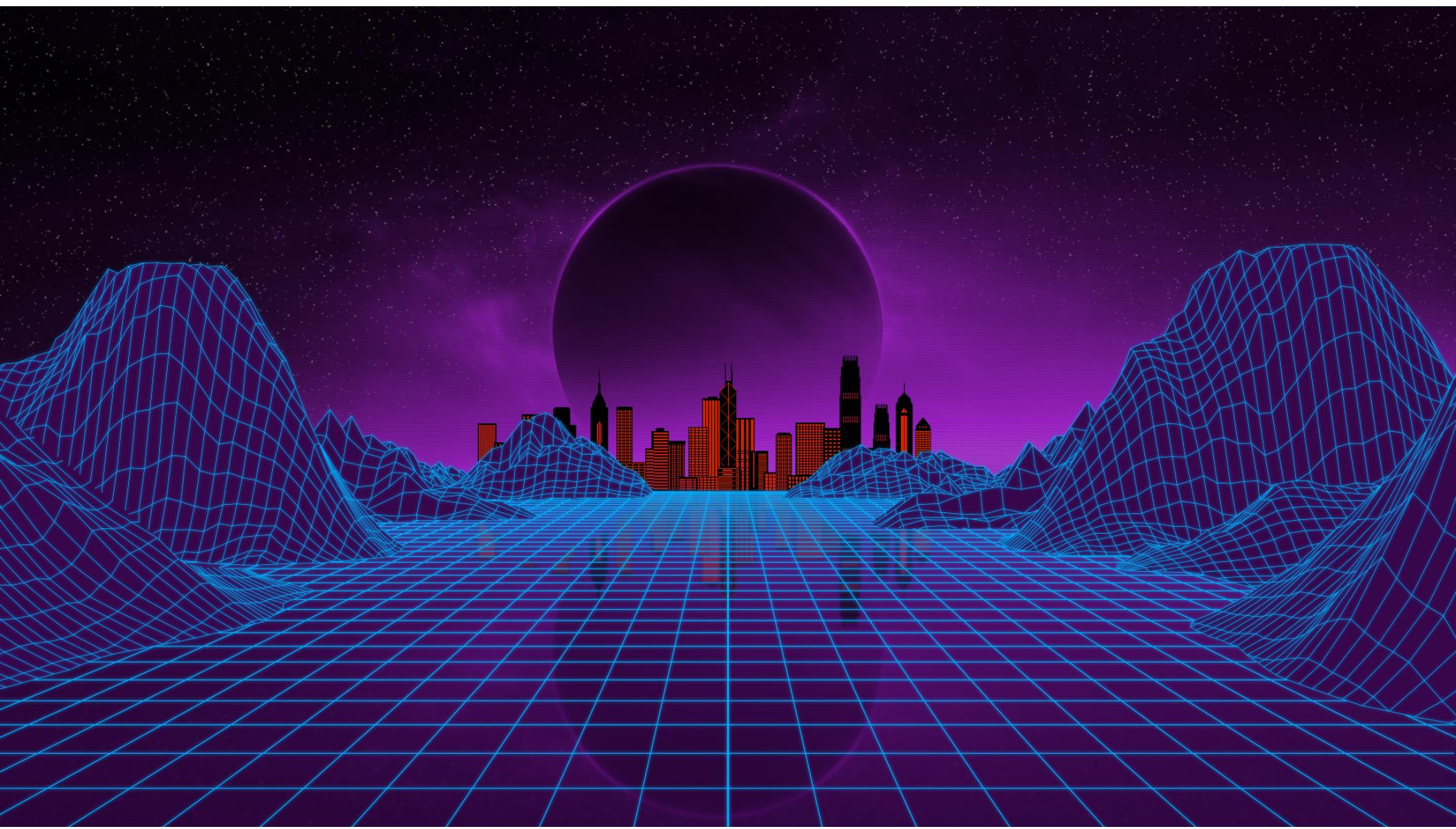
I stepped into the invention
and heard a voice say,

Turn it on Virtual Boy.

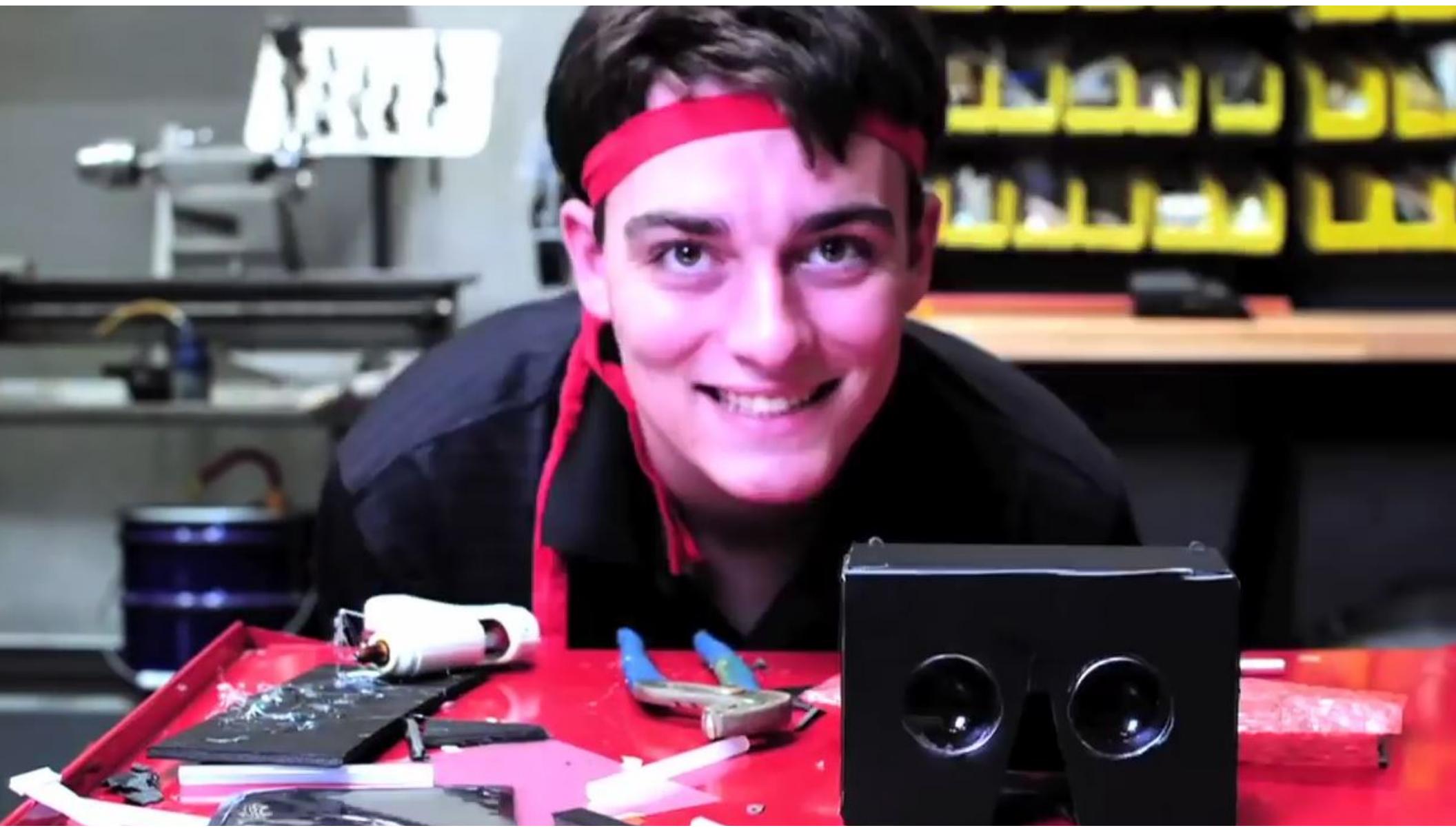
A 3-D game for a 3-D world.

Nintendo

Virtual Boy is a portable 32-bit 3-D game system, featuring shade linear array technology, digital stereo sound, two high-resolution visual displays, and 3-D graphics that immerse you in the game. Coming soon—stereo headphones and Game Link cable for head-to-head action. Turn it on and experience the difference a dimension can make.







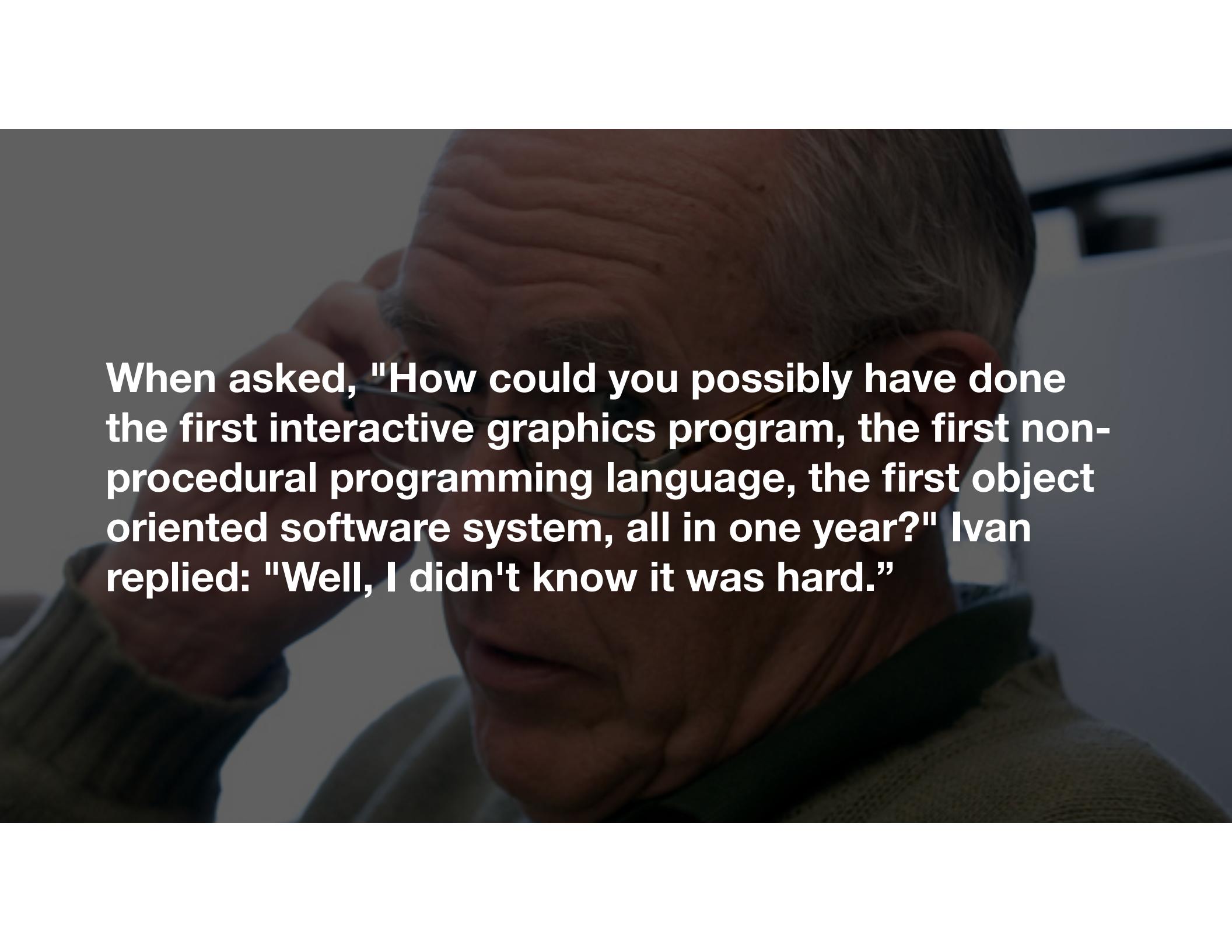
AUGUST 17, 2015

TIME

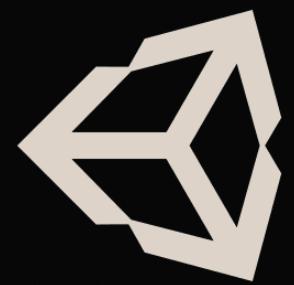
The
Surprising
Joy of
**Virtual
Reality**





A close-up, slightly blurred portrait of Ivan Sutherland. He is wearing dark-rimmed glasses and a green button-down shirt. His gaze is directed downwards and to his right, with a thoughtful expression. The background is out of focus.

When asked, "How could you possibly have done the first interactive graphics program, the first non-procedural programming language, the first object oriented software system, all in one year?" Ivan replied: "Well, I didn't know it was hard."



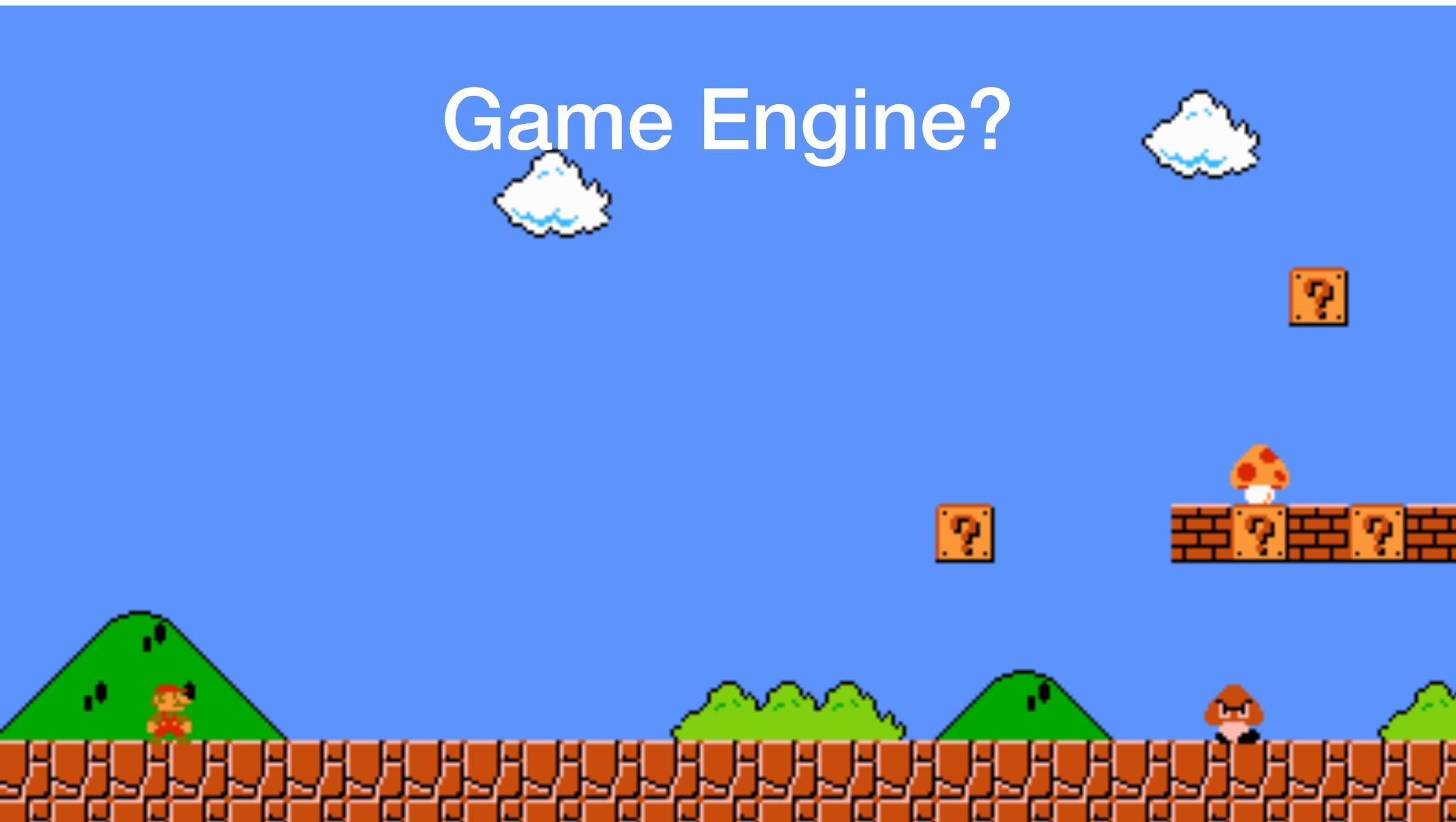
unity

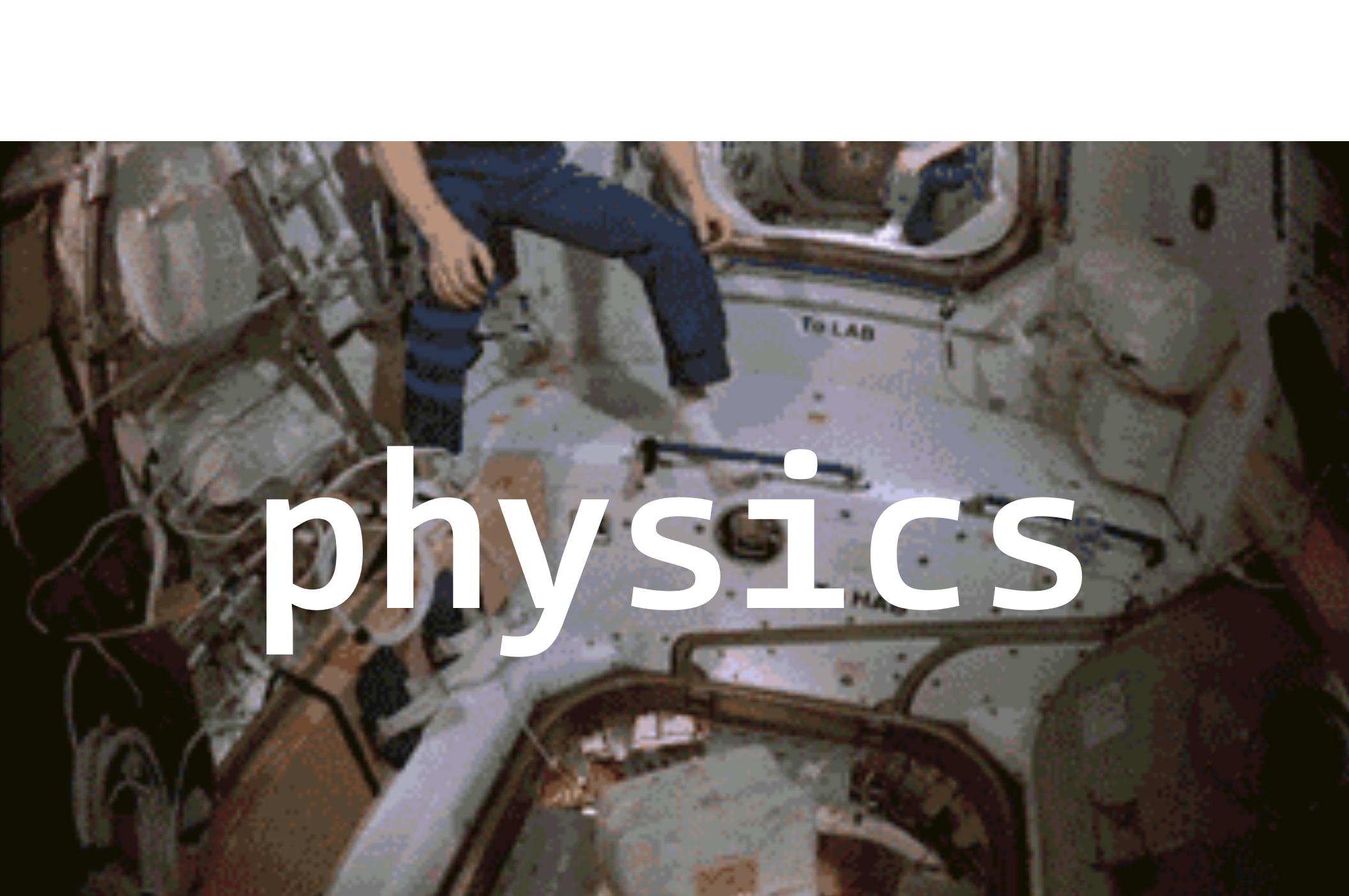


abstraction



Game Engine?





physics

```
PVector position = new PVector(0,0);
PVector velocity = new PVector(0,0);
PVector gravity   = new PVector(0, 9.8);

void draw() {
    velocity.add(gravity);
    position.add(velocity);
    drawObject(position.x,position.y);
}
```

| Rigidbody | |
|---------------------|--|
| Mass | 1 |
| Drag | 0 |
| Angular Drag | 0.05 |
| Use Gravity | <input type="checkbox"/> |
| Is Kinematic | <input checked="" type="checkbox"/> |
| Interpolate | None |
| Collision Detection | Discrete |
| Constraints | |
| Freeze Position | <input type="checkbox"/> X <input type="checkbox"/> Y <input type="checkbox"/> Z |
| Freeze Rotation | <input type="checkbox"/> X <input type="checkbox"/> Y <input type="checkbox"/> Z |

```
int n = 10;
float aperture = 0.05;
glm::mat4 projection = glm::perspective(...);

glm::vec3 right = glm::normalize(glm::cross(object - eye, up));
glm::vec3 p_up = glm::normalize(glm::cross(object - eye, right));

for(int i = 0; i < n; i++) {
    glm::vec3 bokeh = right * cosf(i * 2 * M_PI / n) + p_up * sinf(i * 2 * M_PI / n);
    glm::mat4 modelview = glm::lookAt(eye + aperture * bokeh, object, p_up);
    glm::mat4 mvp = projection * modelview;
    glUniformMatrix4fv(uniform_mvp, 1, GL_FALSE, glm::value_ptr(mvp));
    draw_scene();
    glAccum(i ? GL_ACCUM : GL_LOAD, 1.0 / n);
}

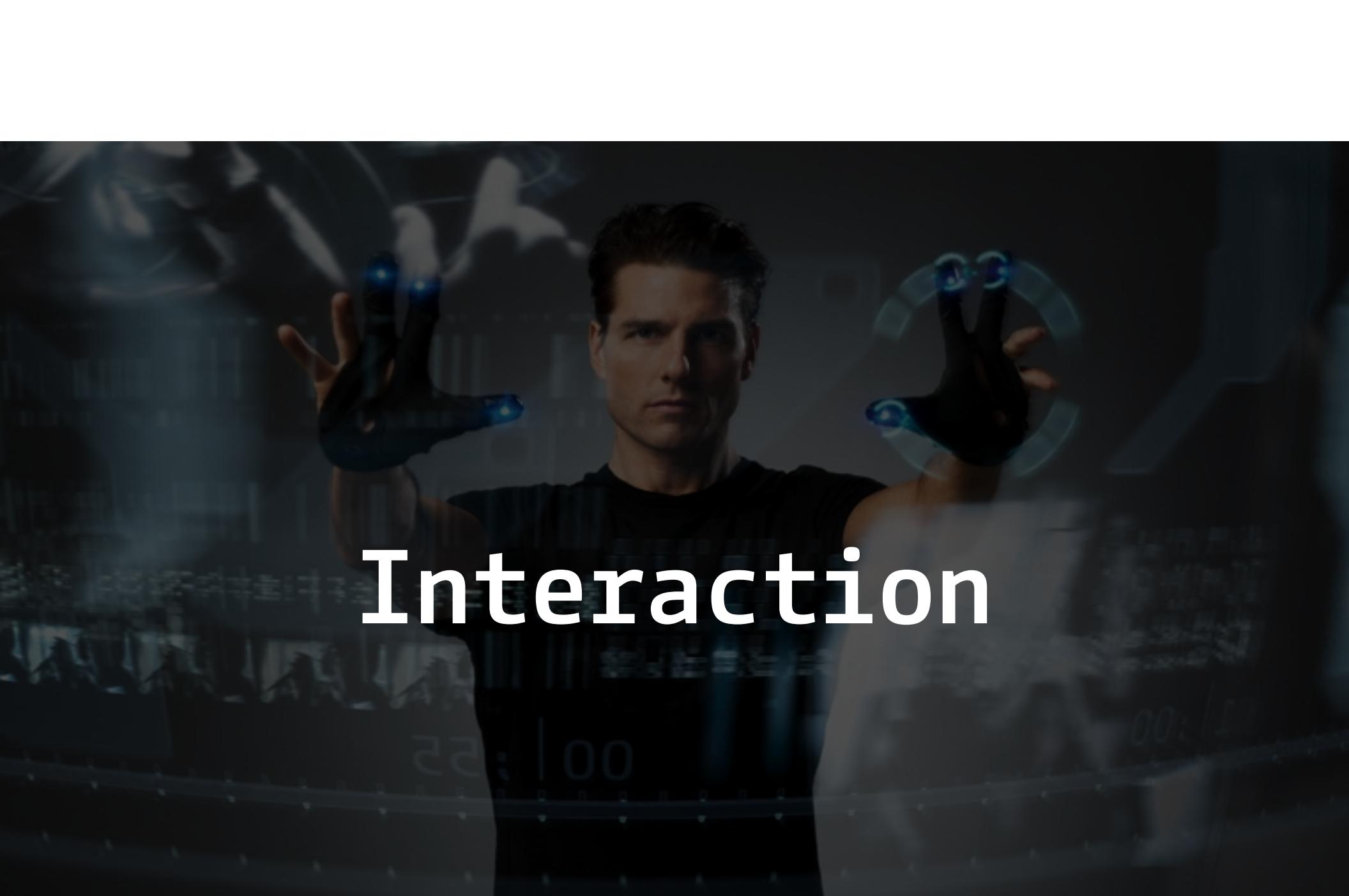
glAccum(GL_RETURN, 1);
glSwapBuffers();
```

Depth Of Field 

| | |
|-------------------|---|
| Focus Distance | 41.8 |
| Aperture (f-stop) | <input type="range" value="0.623"/> 0.623 |
| Use Camera FOV | <input checked="" type="checkbox"/> |
| Kernel Size | Small  |

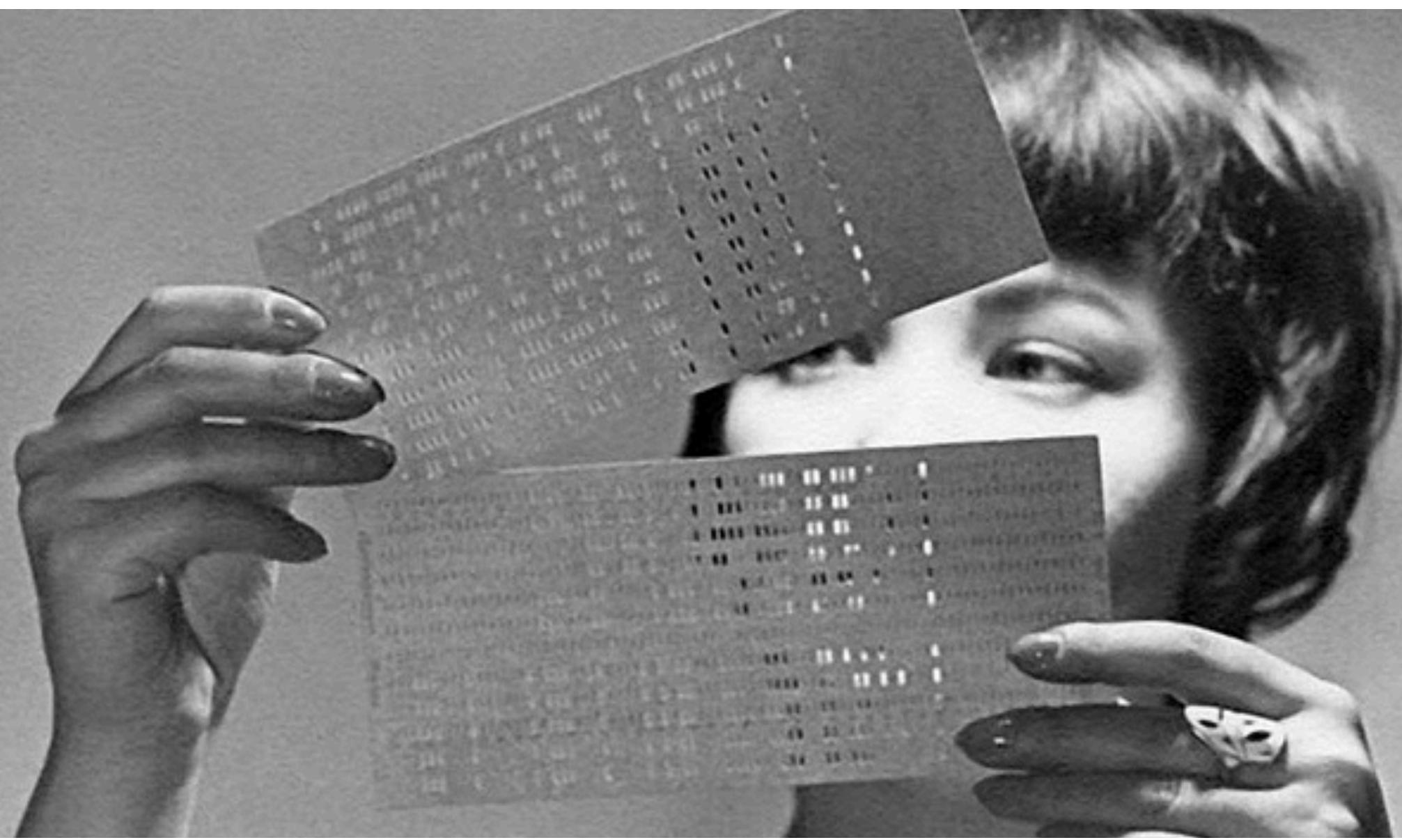
designing for the real world





Interaction







```
C:\>chkdsk  
Volume Serial Number is 3E76-4B58
```

```
2,146,467,840 bytes total disk space  
    131,072 bytes in 2 hidden files  
        32,768 bytes in 1 directories  
    7,405,568 bytes in 124 user files  
2,138,898,432 bytes available on disk
```

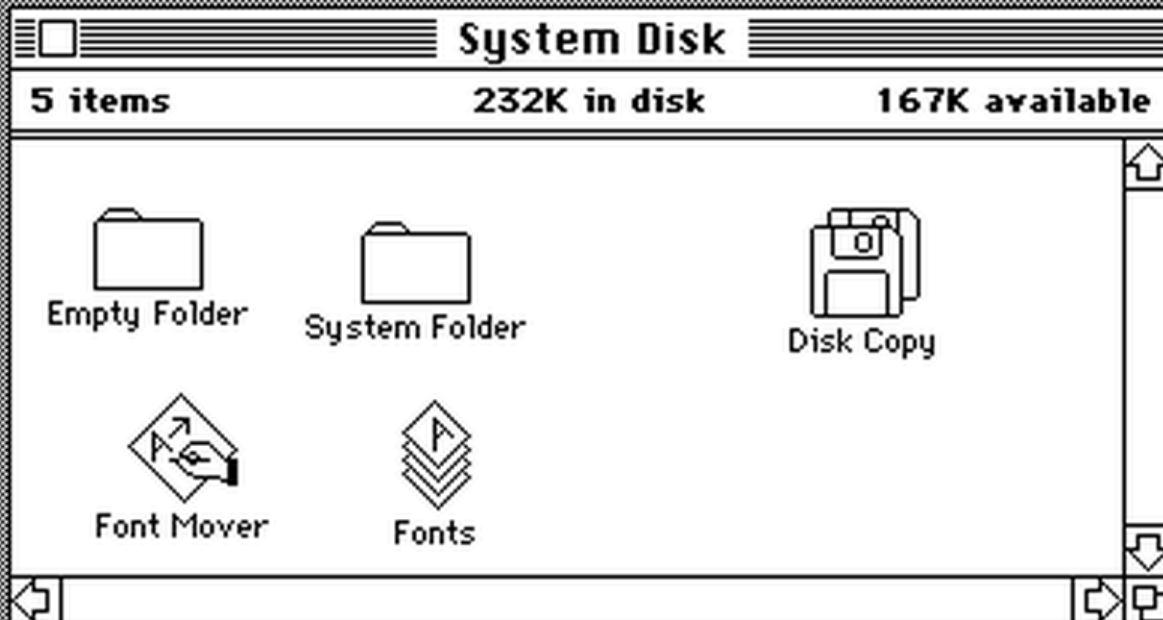
```
        32,768 bytes in each allocation unit  
65,505 total allocation units on disk  
65,274 available allocation units on disk
```

```
655,360 total bytes memory  
602,704 bytes free
```

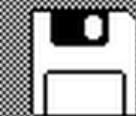
```
Instead of using CHKD SK, try using SCANDISK. SCANDISK can reliably detect  
and fix a much wider range of disk problems. For more information,  
type HELP SCANDISK from the command prompt.
```

```
C:\>_
```

File Edit View Special



System Disk



Guided Tour



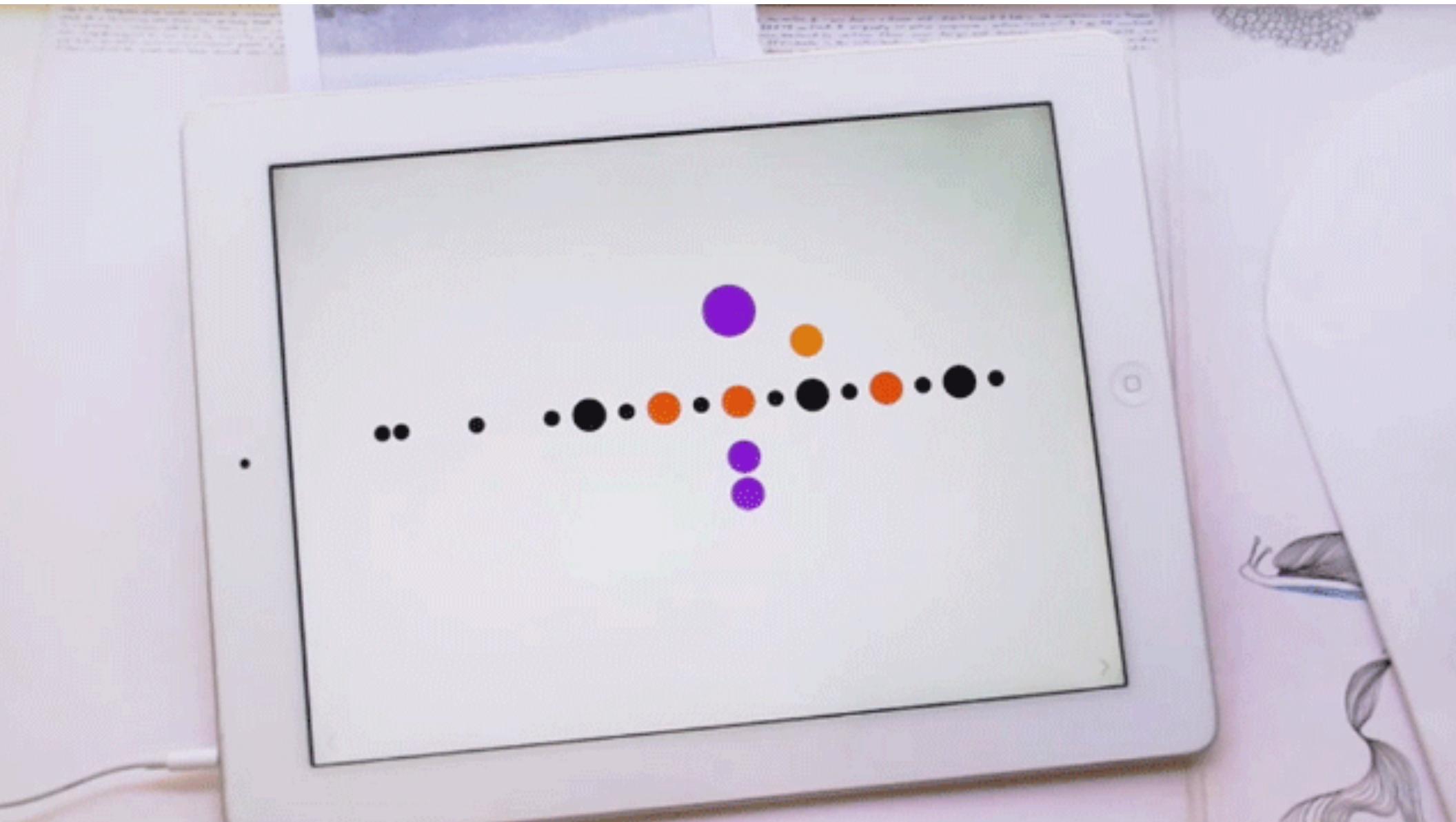
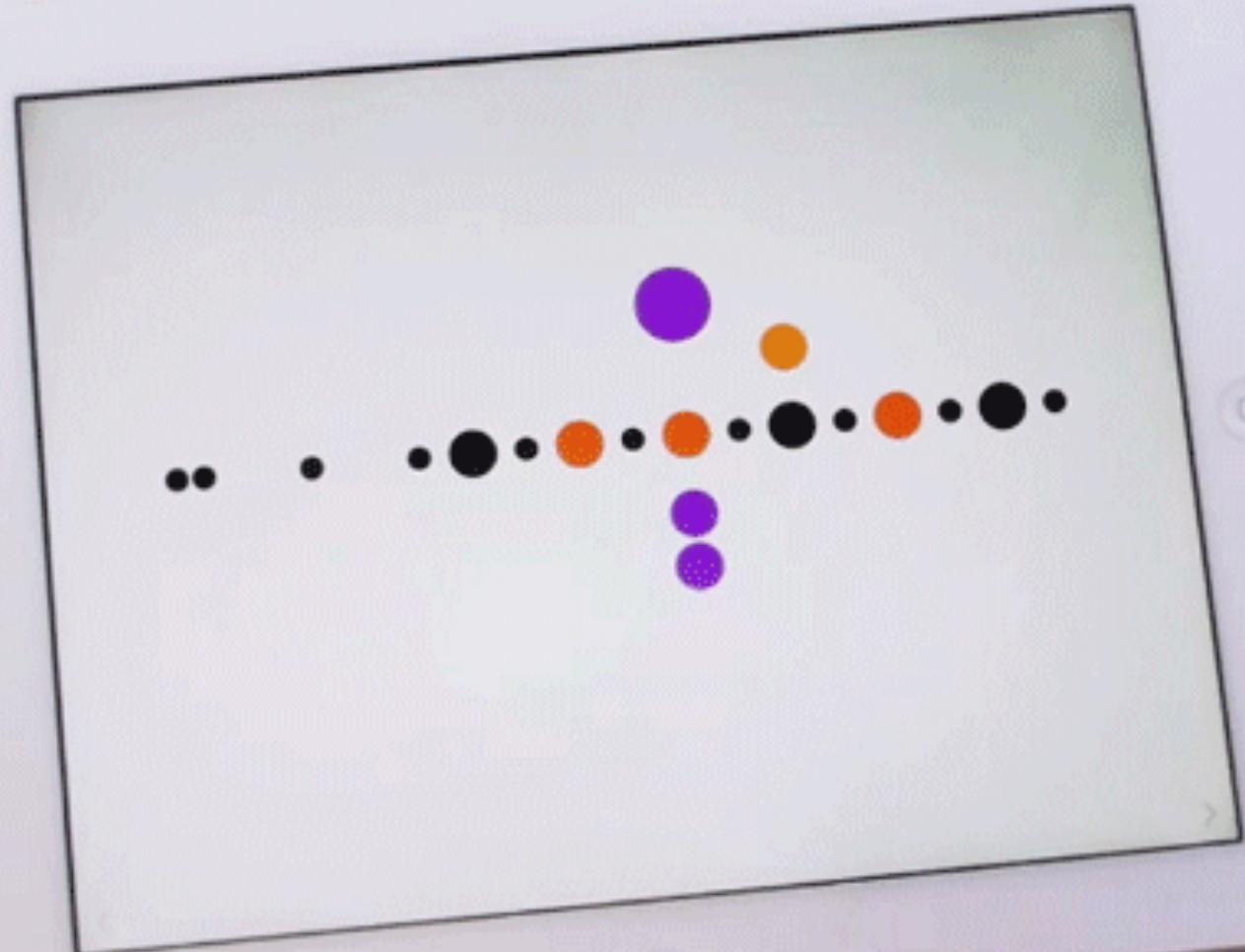
SysVersion



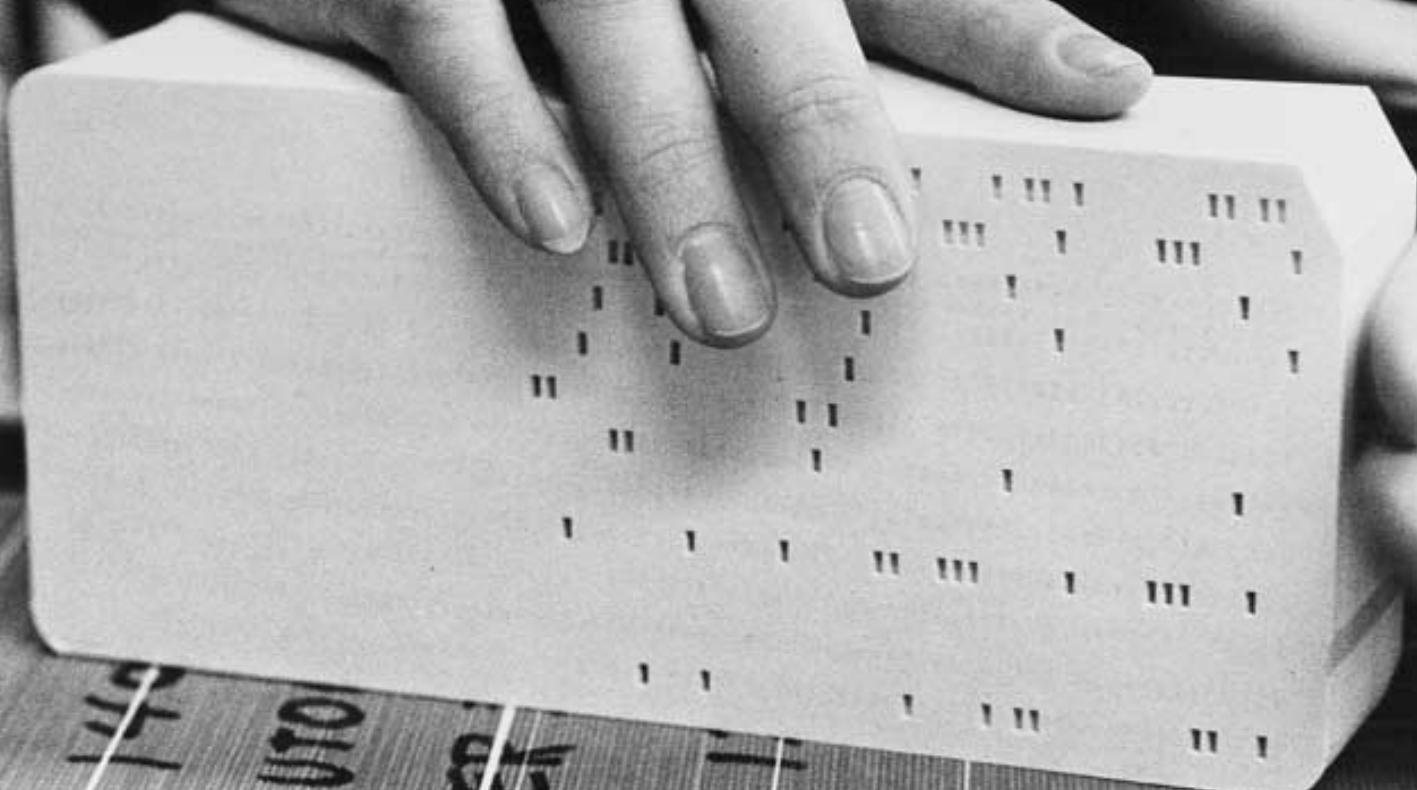
My Folder



Trash

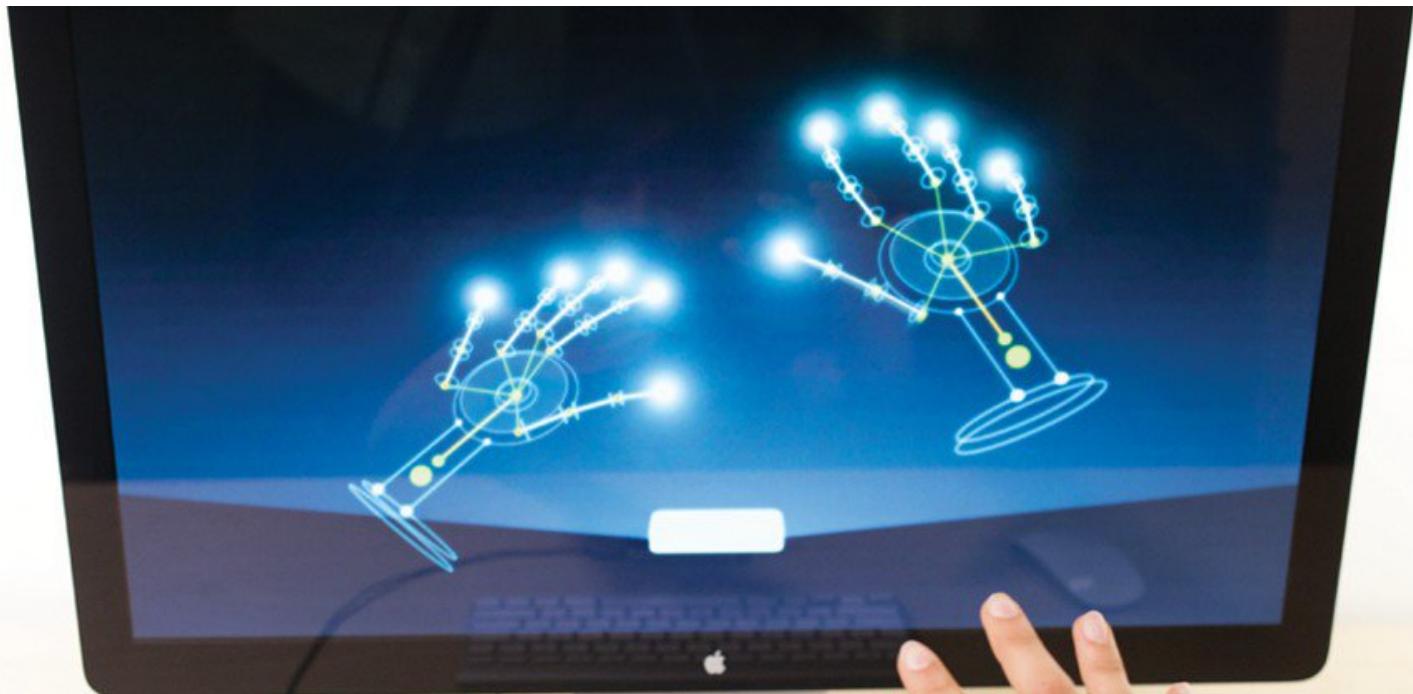






12
10
8
6
4
2
1

AUTO

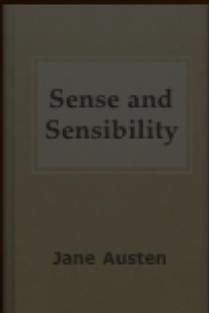
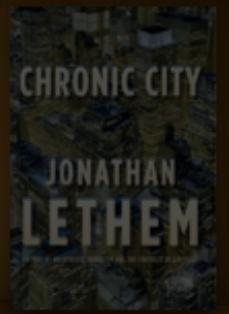


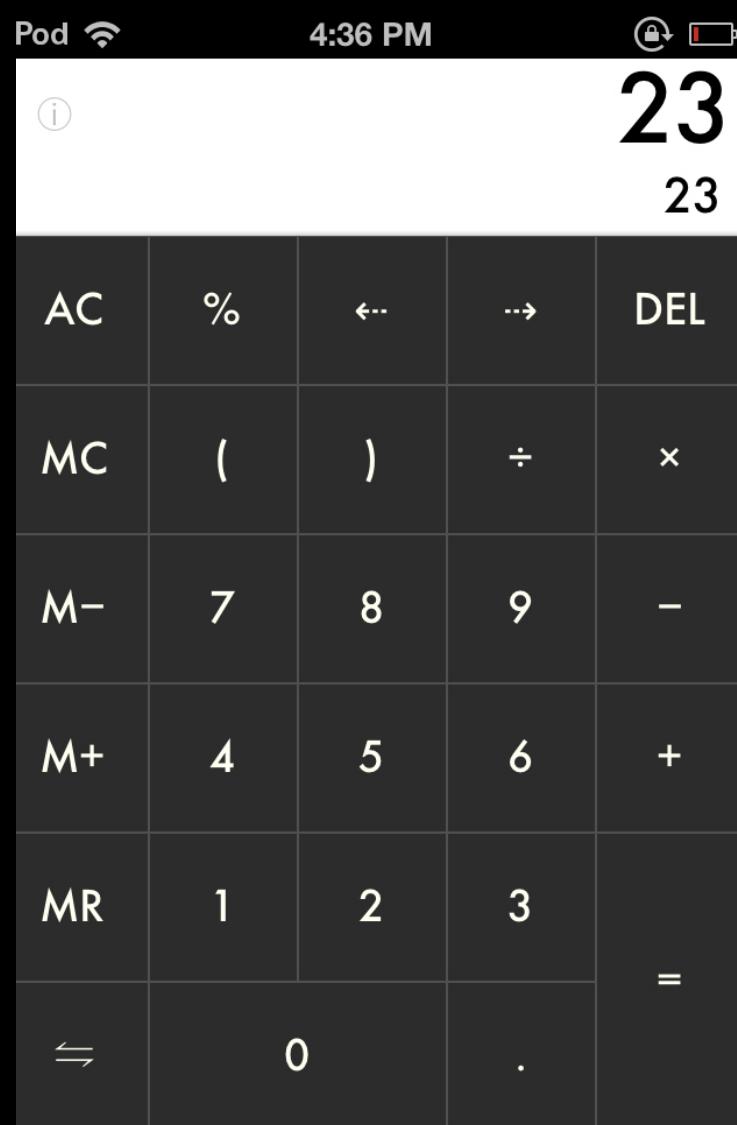
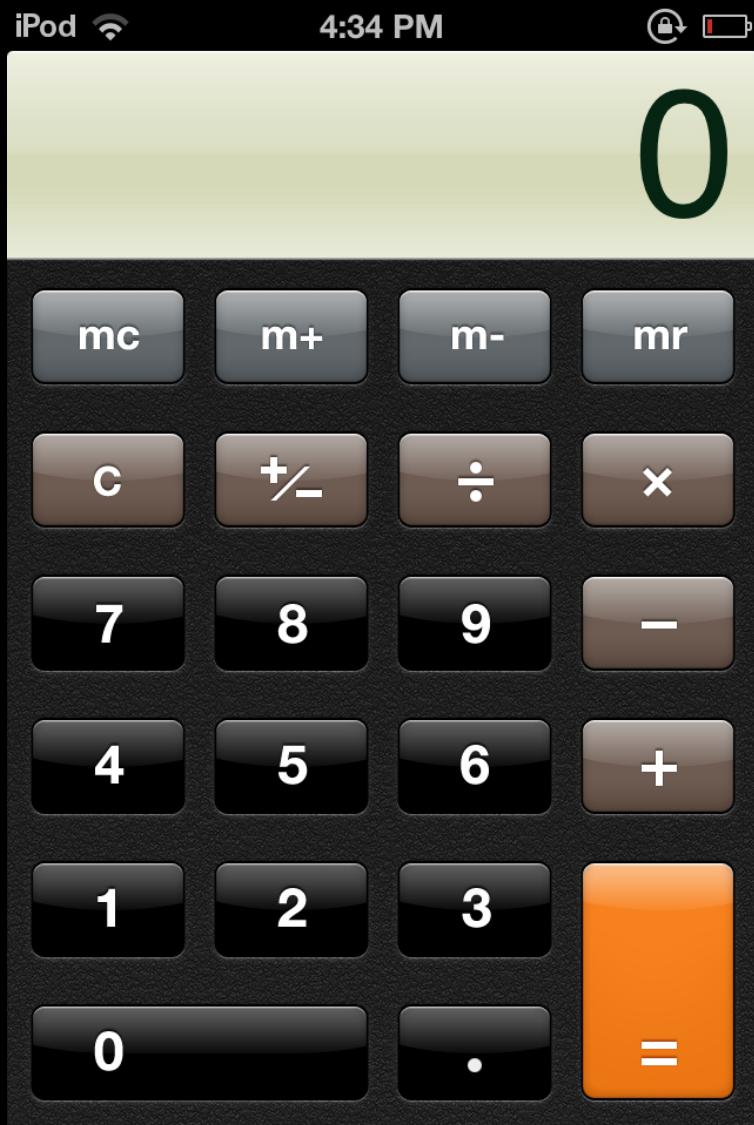


Expectations



Skeuomorphism





iCal

Day | Week | Month | Year



◀ | Today | ▶

| | | | | | | |
|--------|--------|-------|-------|-------|--------|-------|
| Sun 29 | Mon 30 | Tue 1 | Wed 2 | Thu 3 | Fri 4 | Sat 5 |
| 6 | | | | 10 | 11 | 12 |
| 13 | | | | 17 | 18 | 19 |
| 20 | | | | 24 | 25 | 26 |
| 27 | 28 | 29 | 30 | Today | 31 May | 1 |

All Contacts

skeuomorphism 0 Found

No Results



◀ Today ▶

Thu 3

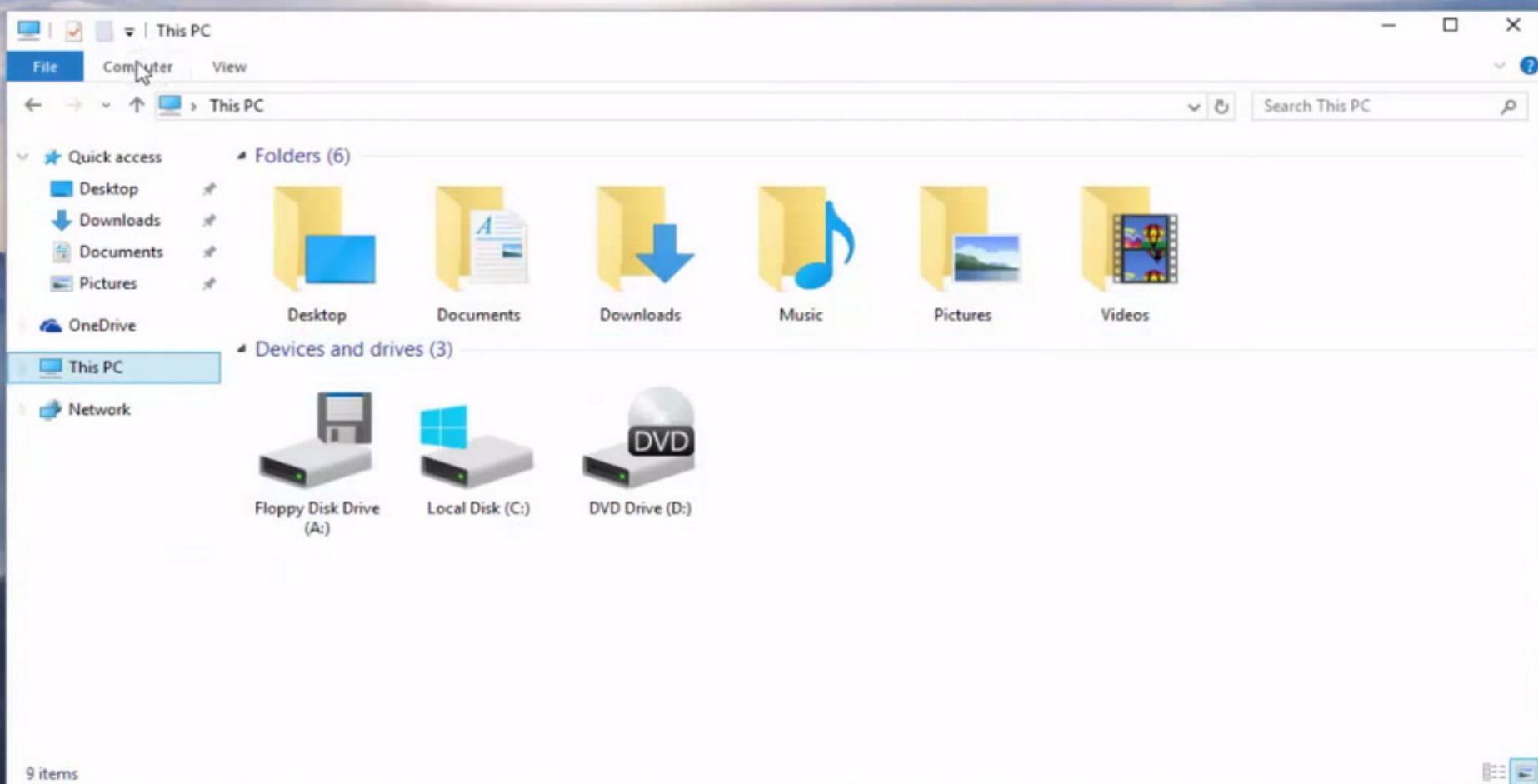
Fri 4

Sat 5

10

11

12



Windows 10 Pro
Evaluation copy

Designing for Interaction

Screens

vs

Space

Netflix

www.netflix.com/browse

NETFLIX

Browse ▾ DVD

Search

Michelle

My List

NETFLIX CHEF'S TABLE

NETFLIX DAREDEVIL

NETFLIX BLOODLINE

NETFLIX UNBREAKABLE KIMMY SCHMIDT

NETFLIX MARCO POLO

NETFLIX VIBRANT

Marvel's Daredevil

★★★★★ 2015 TV-MA 1 Season

Blinded as a young boy, Matt Murdock fights injustice by day as a lawyer and by night as the Super Hero Daredevil in Hell's Kitchen, New York City.

Starring: Charlie Cox, Deborah Ann Woll, Vincent D'Onofrio
Genres: TV Shows, Comic Book & Superhero TV, Crime TV Shows
This show is: Exciting, Gritty, Dark

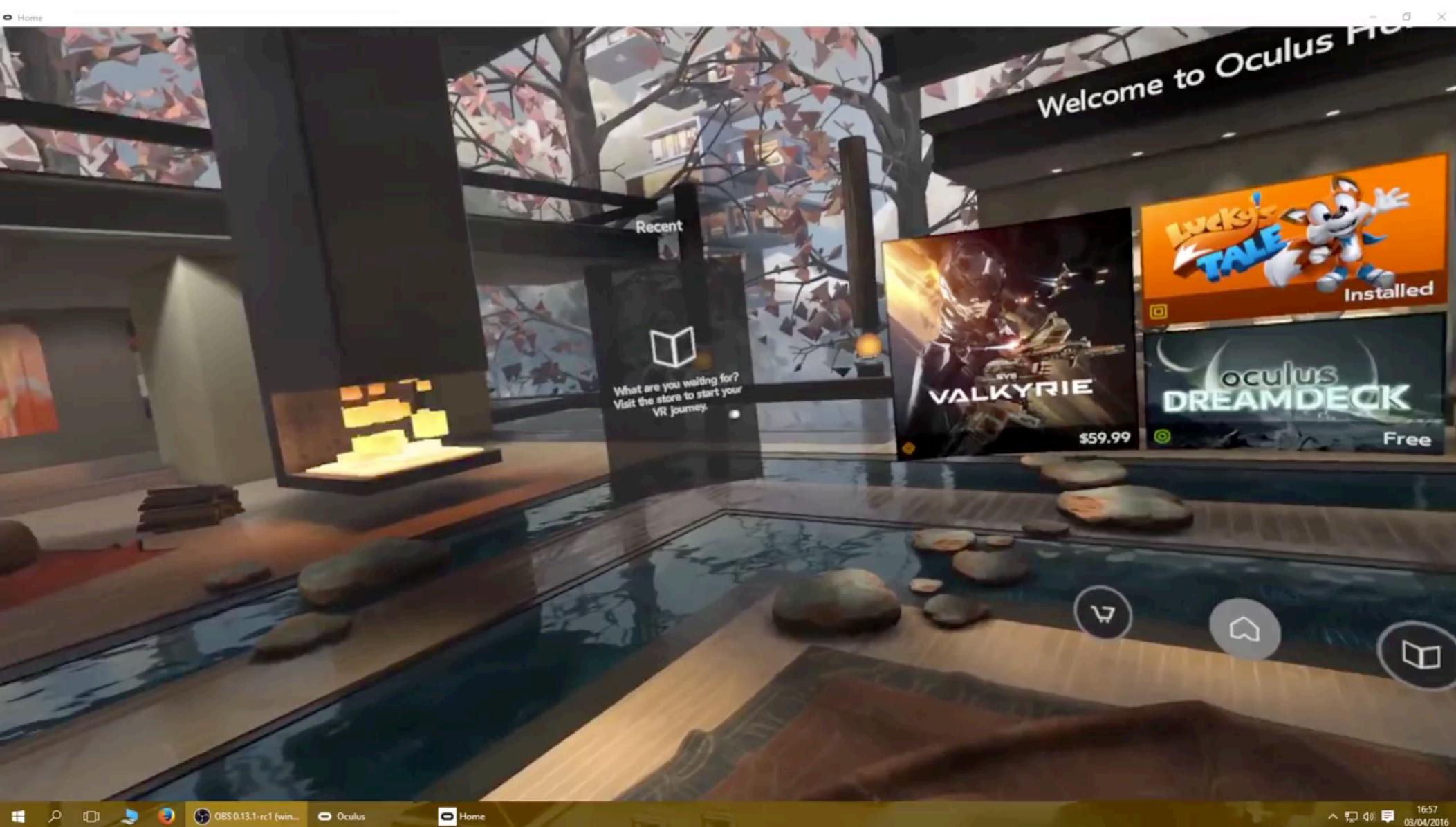
"Law & Order: Criminal Intent" star Vincent D'Onofrio plays Daredevil's nemesis Wilson Fisk, a.k.a. Kingpin.

MY LIST

OVERVIEW EPISODES MORE LIKE THIS DETAILS







Screens

vs

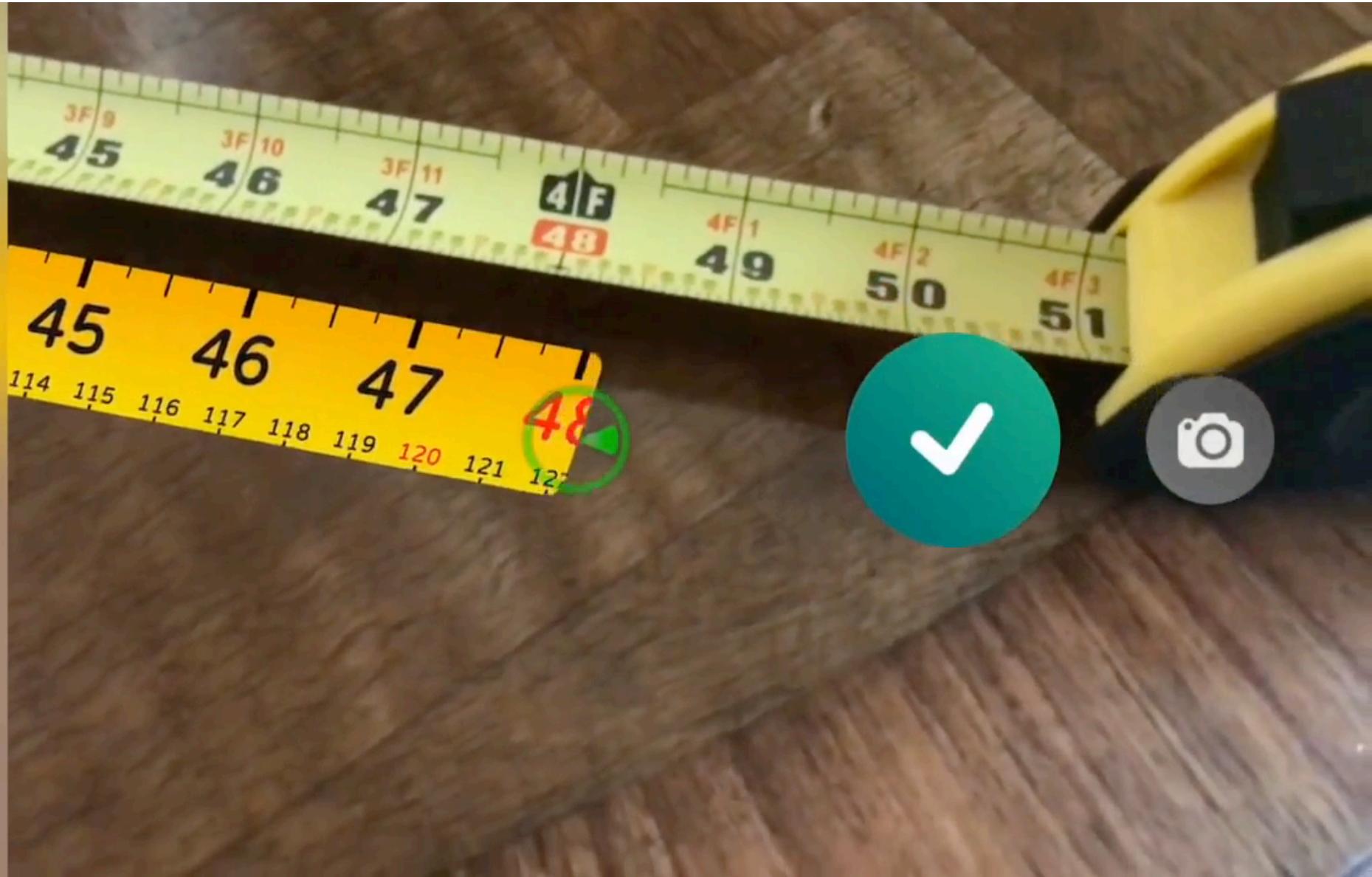
Space

48.0 in

122 cm

METRIC

4.0ft



Manipulation

Exploration

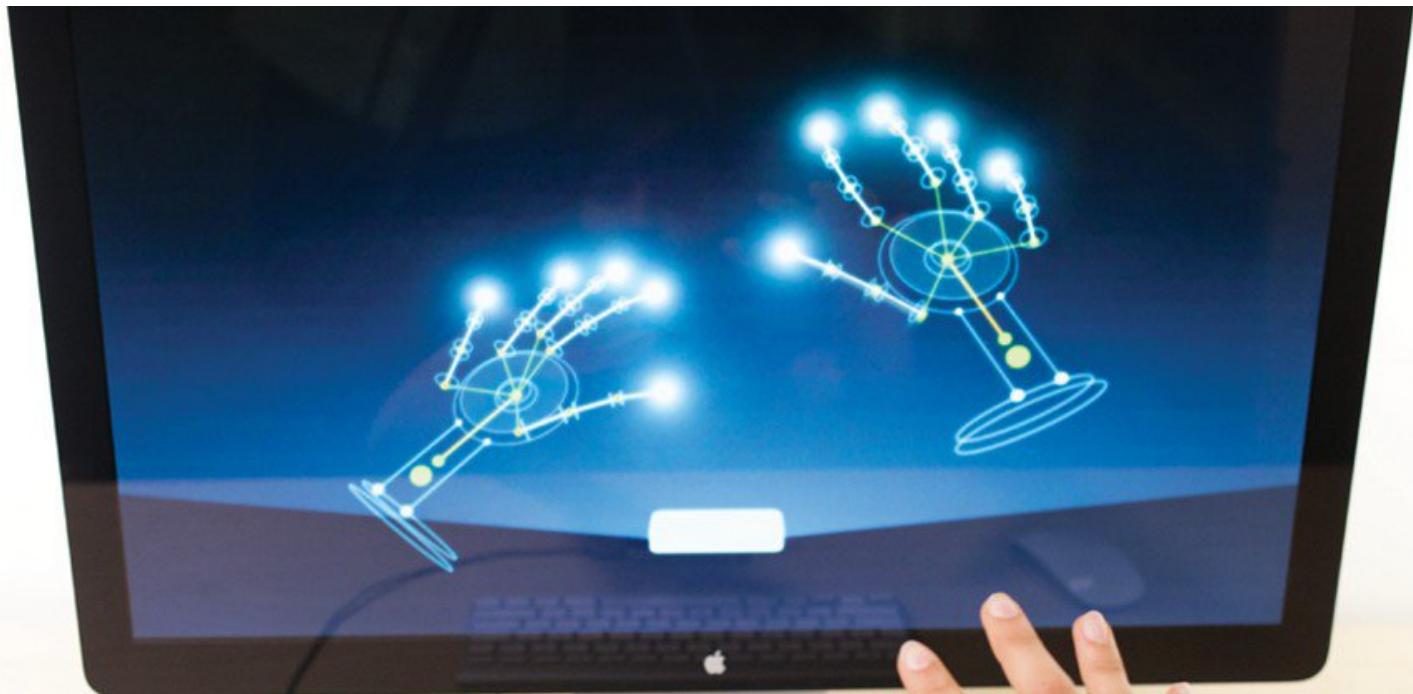


Manipulation

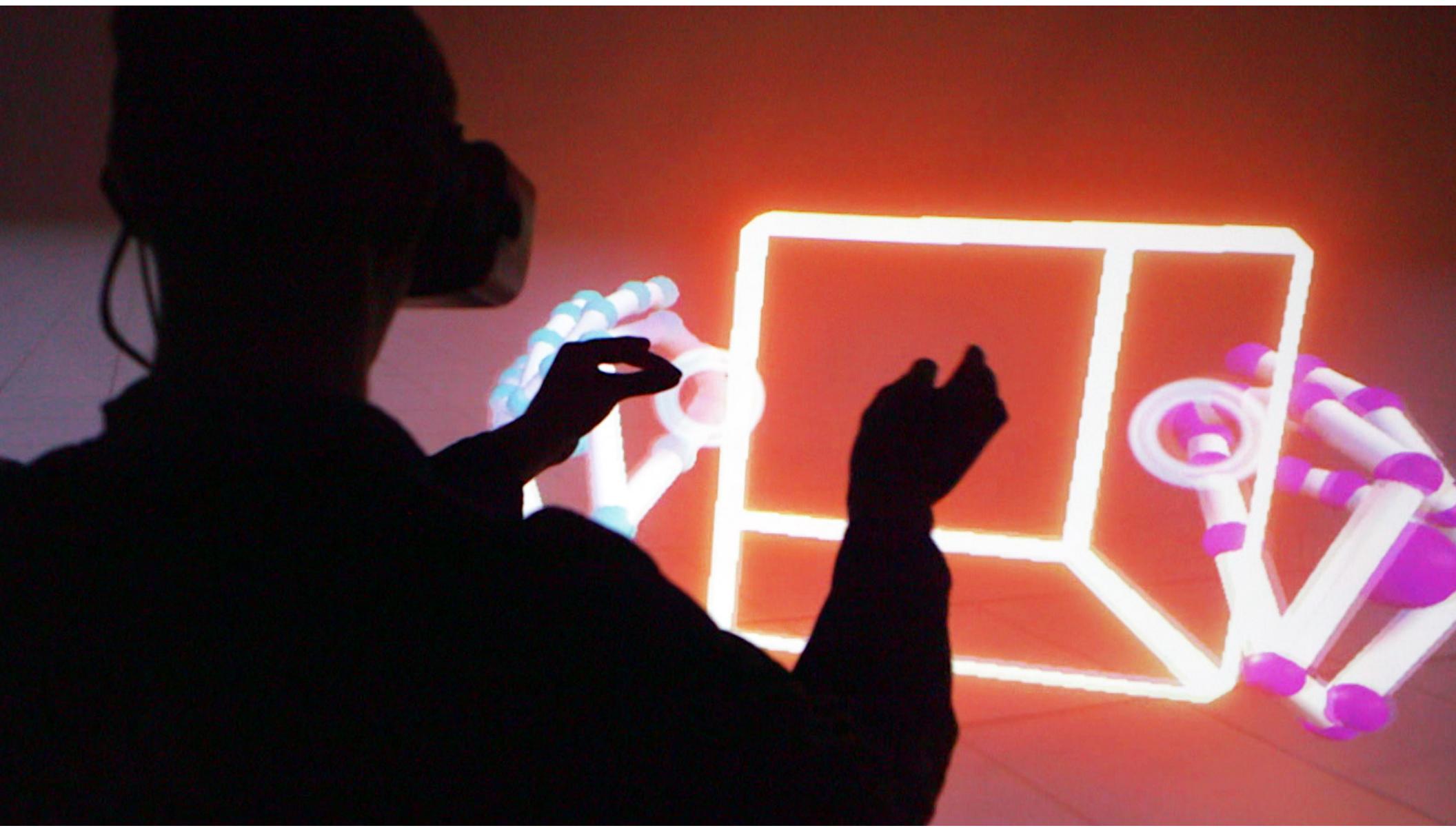




POWERPLAY.









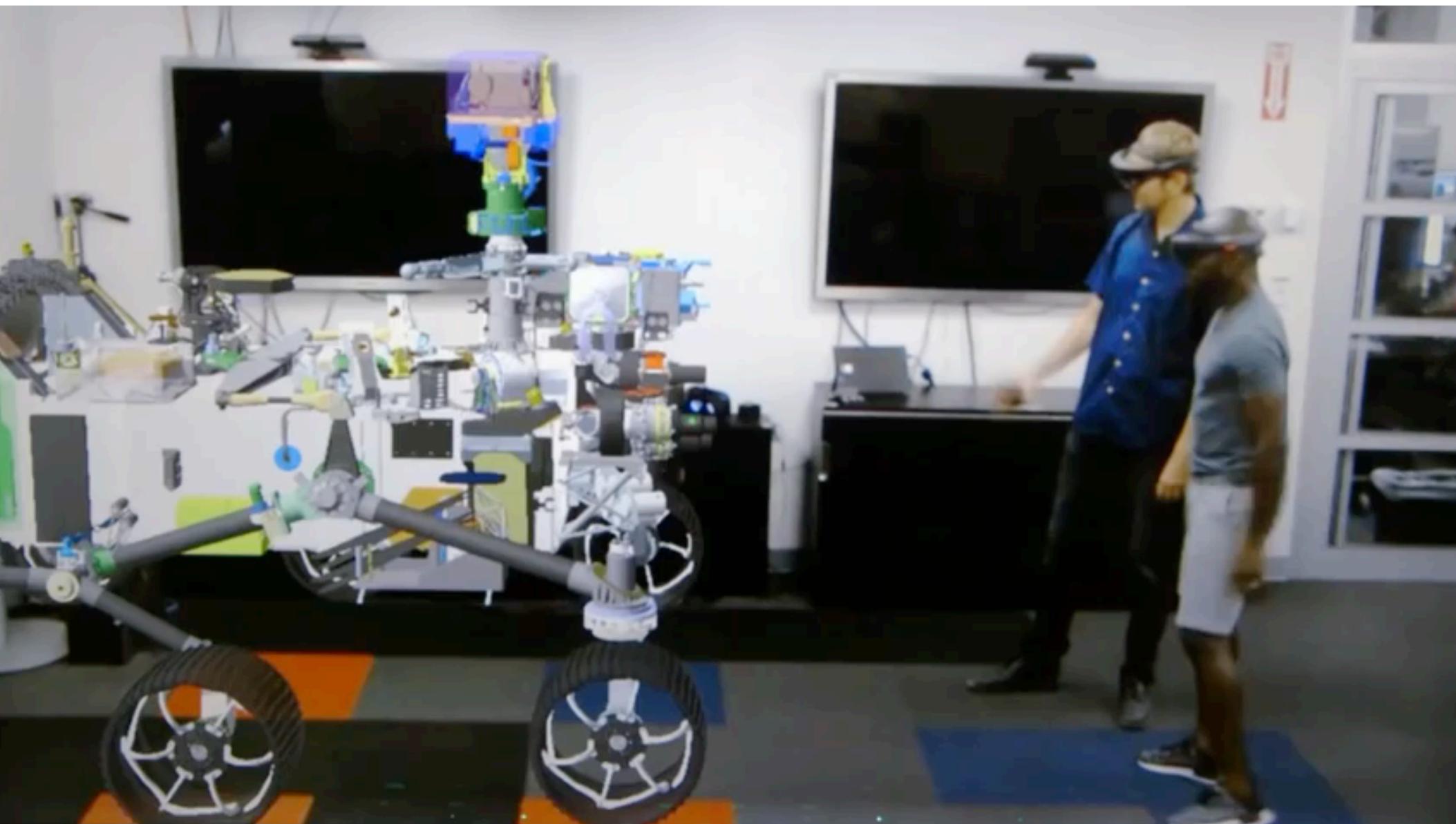
Hi, I'm Cortana.

Manipulation

Exploration



Exploration





Designing for Interaction



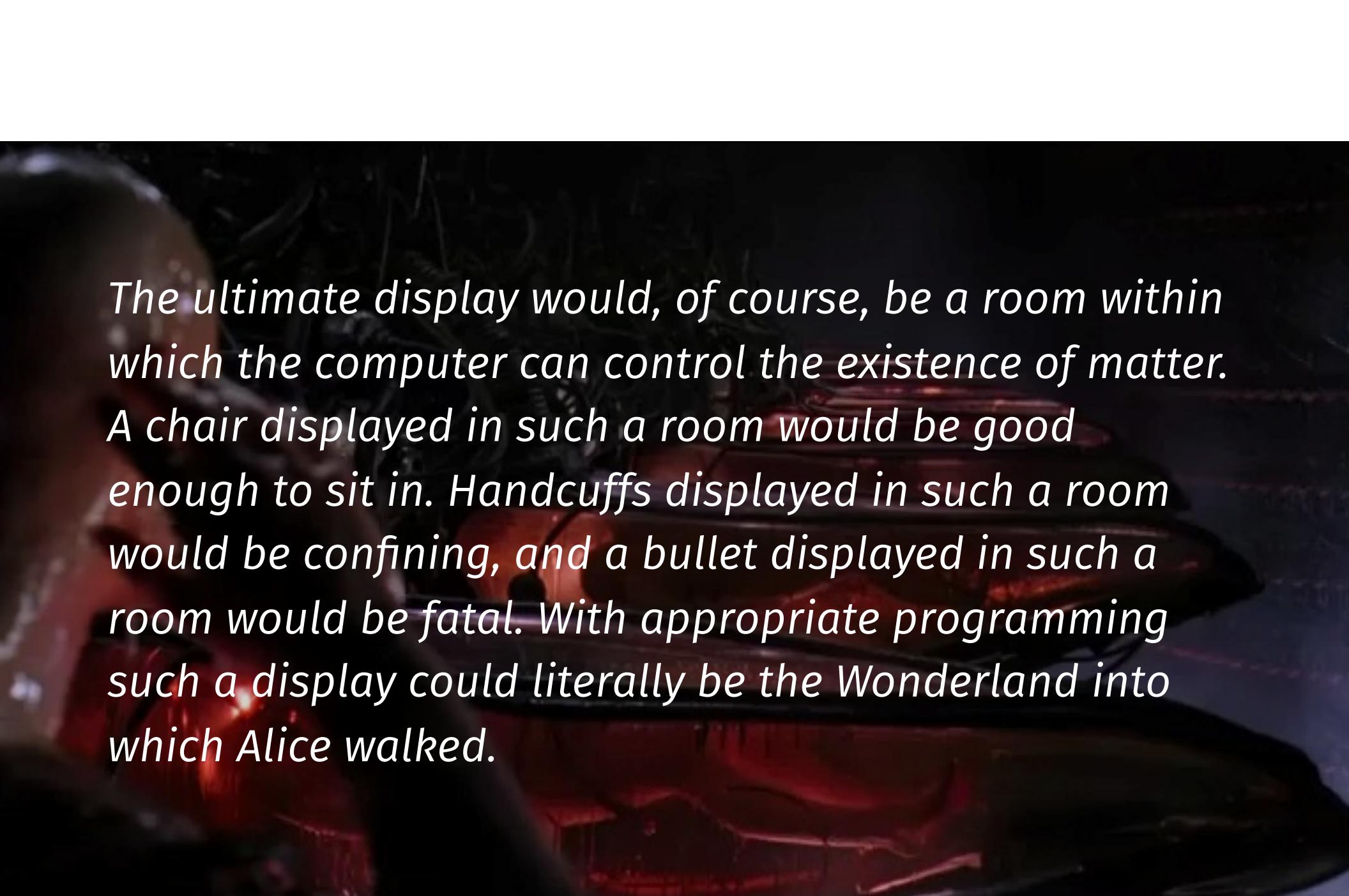
reaaaallly cute



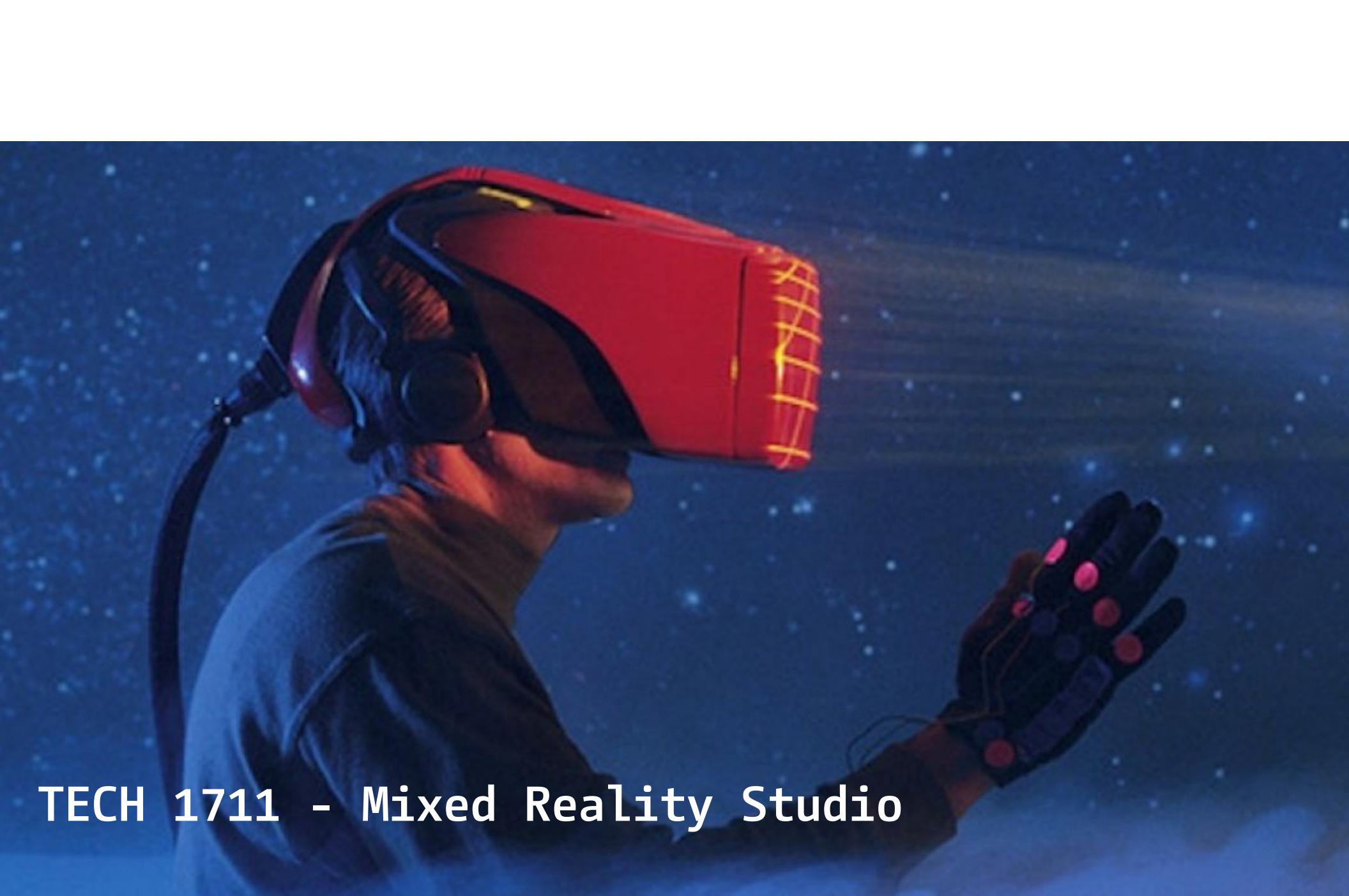
Virtual Reality (LaValle) - Chapter 1

<http://vr.cs.uiuc.edu/>

Take a look at the Github



The ultimate display would, of course, be a room within which the computer can control the existence of matter. A chair displayed in such a room would be good enough to sit in. Handcuffs displayed in such a room would be confining, and a bullet displayed in such a room would be fatal. With appropriate programming such a display could literally be the Wonderland into which Alice walked.



TECH 1711 - Mixed Reality Studio