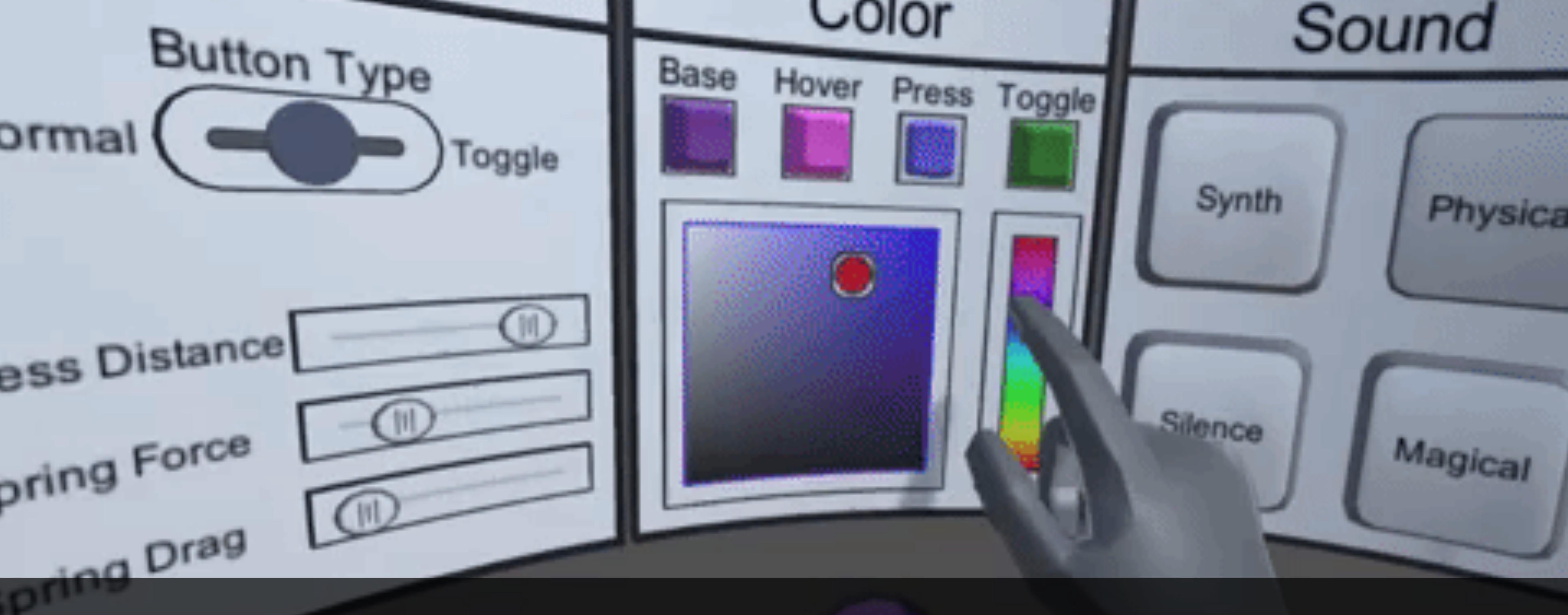


CSMA 113 - Mixed Reality Studio



# UI and UX





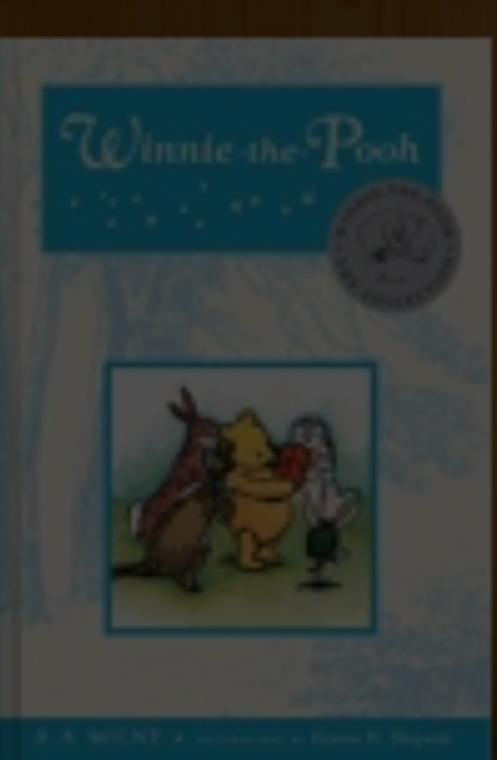
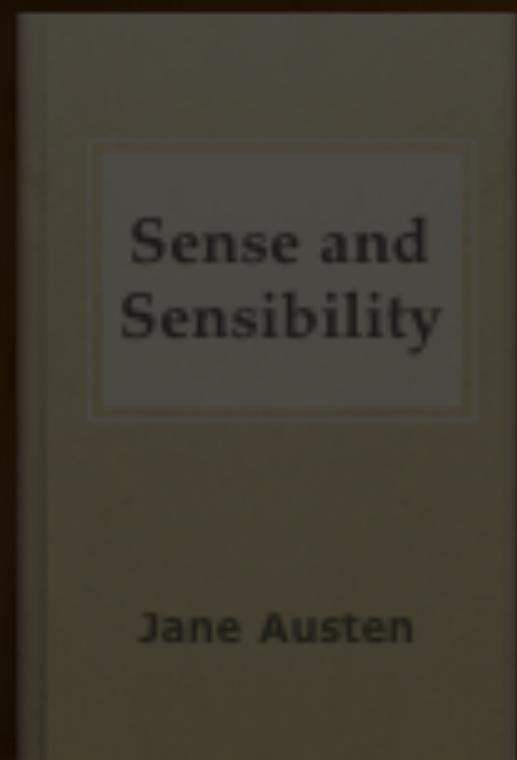
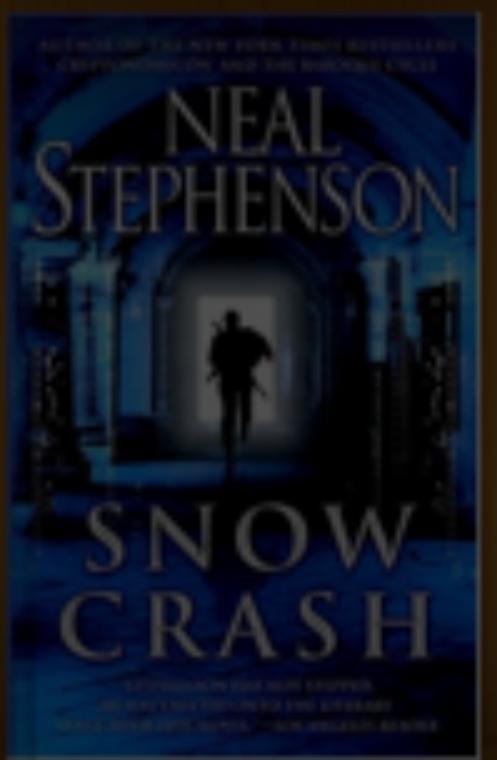
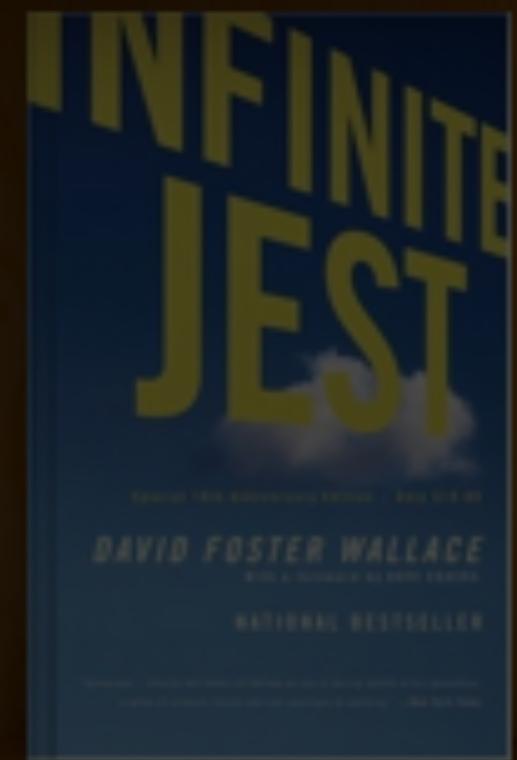
# Manipulation

# Exploration



The background features a dark purple gradient. In the center is a large, solid red circle. The foreground consists of two stylized mountain ranges made of purple wireframe mesh. A light gray grid is visible at the bottom.

# Expectations



# Skeuomorphism

# Private Settings

Off

On

Off

Press

Press

Press

UI and UX



HAWAII

New Post



Hotel Beach

Date Posted 10/24/2014



Life on the Island

Date Posted 10/18/2014



Hawaiian Flowers

Date Posted 10/24/2014



A color photograph of a man standing in a forest. He is wearing a brown jacket over a light-colored shirt and dark pants. He has his arms raised high above his head, holding a white boombox with two large black speakers. The background consists of tall, thin trees with green and yellow leaves. A car is partially visible at the bottom of the frame.

Diegetic vs Non-Diegetic



# Diegetic vs Non-Diegetic



Diegetic vs Non-Diegetic

ANALYSIS IS:  
COMPLETED  
44654 453 30  
4334 450 16  
245261 865 25  
453665 765 46

MATCH

SCAN MODE 43894  
SIZE ASSESSMENT

ASSESSMENT COMPLETE  
FIT PROBABILITY 0.99

RESET TO ACQUISITION  
MODE SPEECH LEVEL 78

PRIORITY OVERRIDE  
DEFENSE SYSTEMS SET  
ACTIVE STATUS  
LEVEL 2347923 MAX

Goo  
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B  
r  
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h

Brushes  
Light





Smarter Objects by Valentin Heun, Shunichi Kasahara, Pattie Maes - MIT Media Lab

ANALYSIS IS:  
COMPLETED  
44654 453 30  
44334 450 16  
245261 865 25  
453665 765 46

MATCH

SCAN MODE 43894  
SIZE ASSESSMENT

ASSESSMENT COMPLETE  
FIT PROBABILITY 0.99

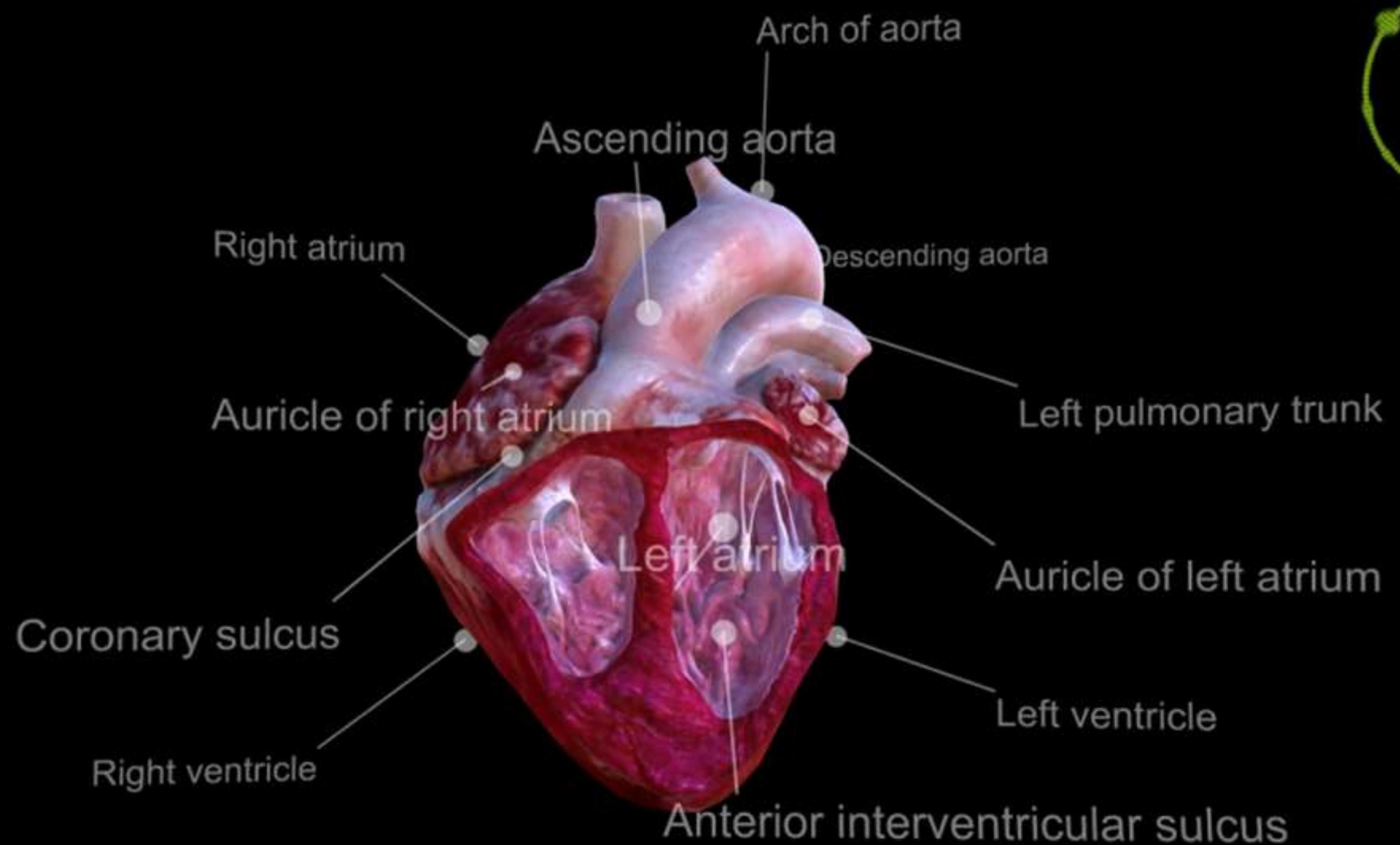
RESET TO ACQUISITION  
MODE SPEECH LEVEL 78

PRIORITY OVERRIDE  
DEFENSE SYSTEMS SET  
ACTIVE STATUS  
LEVEL 2347923 MAX

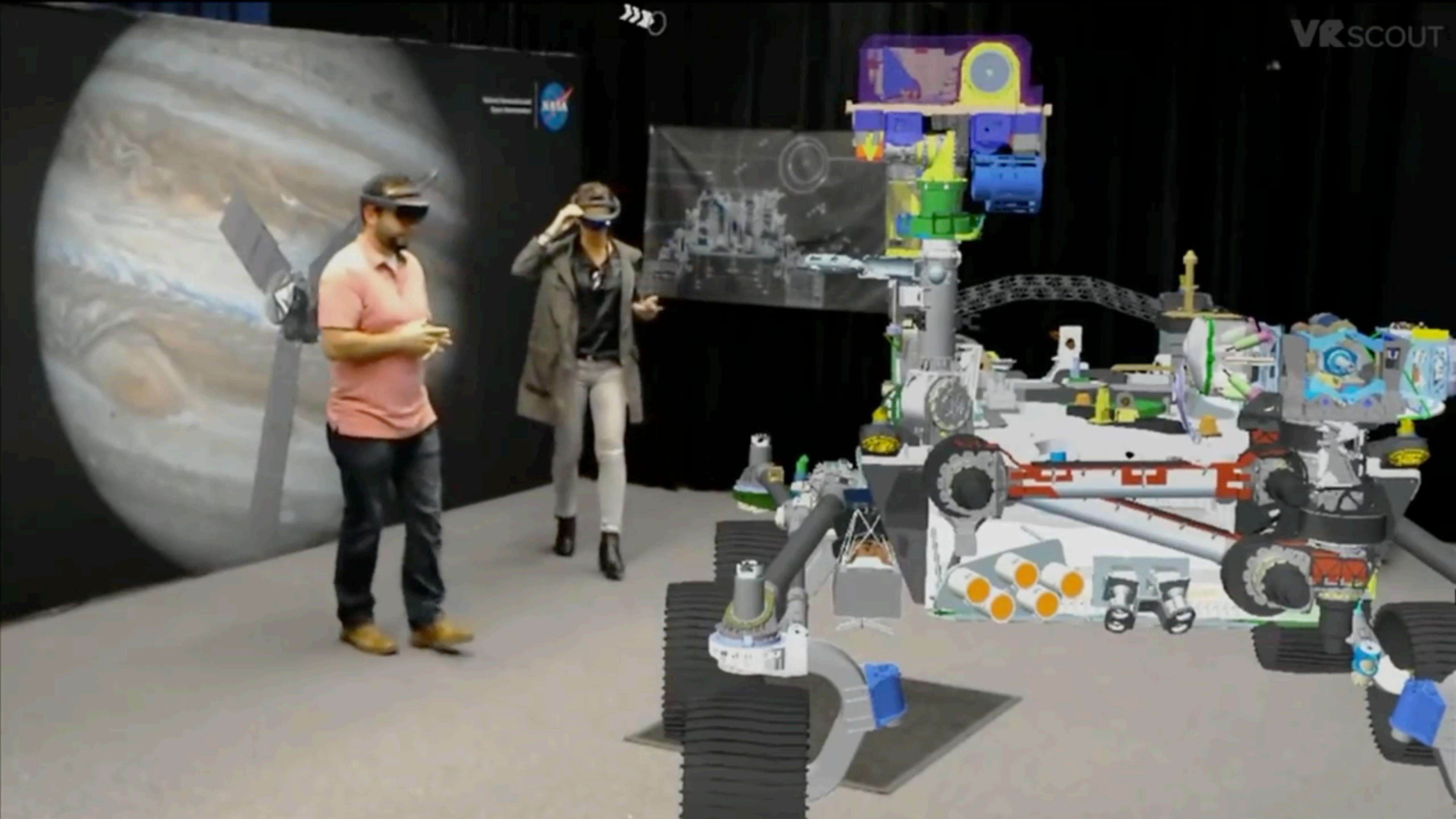




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**ANIMA RES**  
Studio for 3D medical animation



ANALYSIS IS:  
COMPLETED  
44654 453 30  
44334 450 16  
245261 865 25  
453665 765 46

MATCH

SCAN MODE 43894  
SIZE ASSESSMENT

ASSESSMENT COMPLETE  
FIT PROBABILITY 0.99

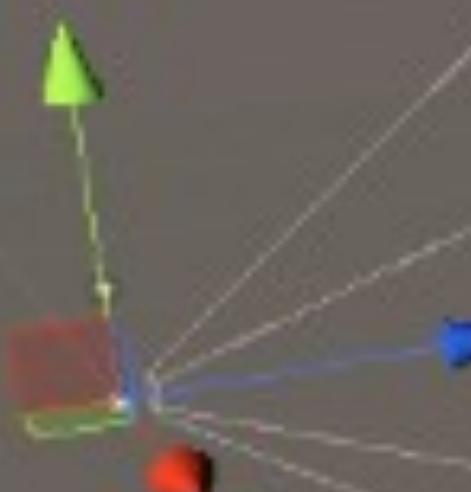
RESET TO ACQUISITION  
MODE SPEECH LEVEL 78

PRIORITY OVERRIDE  
DEFENSE SYSTEMS SET  
ACTIVE STATUS  
LEVEL 2347923 MAX

SIZE ASSESSMENT  
ASSESSMENT COMPLETE  
FIT PROBABILITY 0.99  
RESET TO ACQUISITION  
MODE SPEECH LEVEL 78  
PRIORITY OVERRIDE  
DEFENSE SYSTEMS SET  
ACTIVE STATUS  
LEVEL 2347923 MAX

MATCH

2347923 455 31  
954324450 16  
245201 326 26  
453 955 705 46  
232 878 862 39  
  
356 878 554 94  
854217 905 80  
254396 958 32



**ANALYSIS:**

\*\*\*\*\*

234654 453 38  
654334 450 16  
245261 856 26  
453665 766 46  
382856 863 09

356878 544 04  
664217 985 89  
254346 956 32

MATCH

SCAN MODE 43984  
SIZE ASSESSMENT

ASSESSMENT COMPLETE

FIT PROBABILITY 0.99

RESET TO ACQUISITION  
MODE SPEECH LEVEL 78

PRIORITY OVERRIDE  
DEFENSE SYSTEMS SET  
ACTIVE STATUS  
LEVEL 2347923 MAX

SCAN MODE 43984  
SIZE ASSESSMENT

ASSESSMENT COMPLETE

FIT PROBABILITY 0.99

RESET TO ACQUISITION  
MODE SPEECH LEVEL 78

PRIORITY OVERRIDE  
DEFENSE SYSTEMS SET  
ACTIVE STATUS  
LEVEL 2347923 MAX

MATCH



# VR Sickness

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# The dangers of virtual reality

Commentary: Tripping over wires, accidental TV breakage and nausea. VR could get you hurt. Better to be prepared.

BY SCOTT STEIN / MARCH 29, 2016 2:59 PM PDT





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# How the battle to stop VR sickness will change game development forever

By [Louise Blain](#) October 14, 2016 [News](#)



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# 7 Things You Can Do to Overcome VR Motion Sickness



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# HTC Vive

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HTC Vive > General Discussions > Topic Details



Litva ▾ Mar 16, 2016 @ 9:53am

## Do you feel less motion sick in Rift then Vive ?

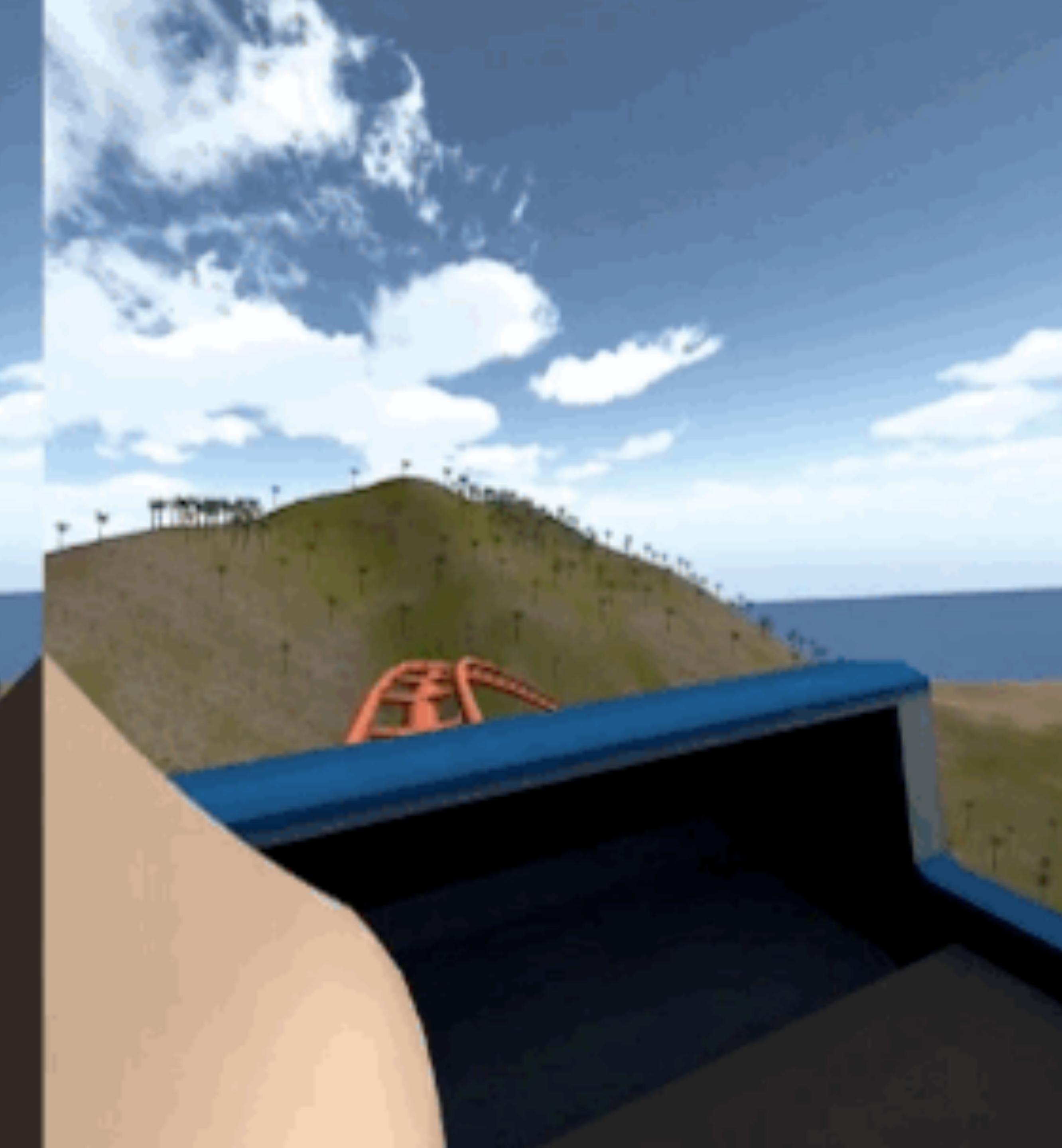
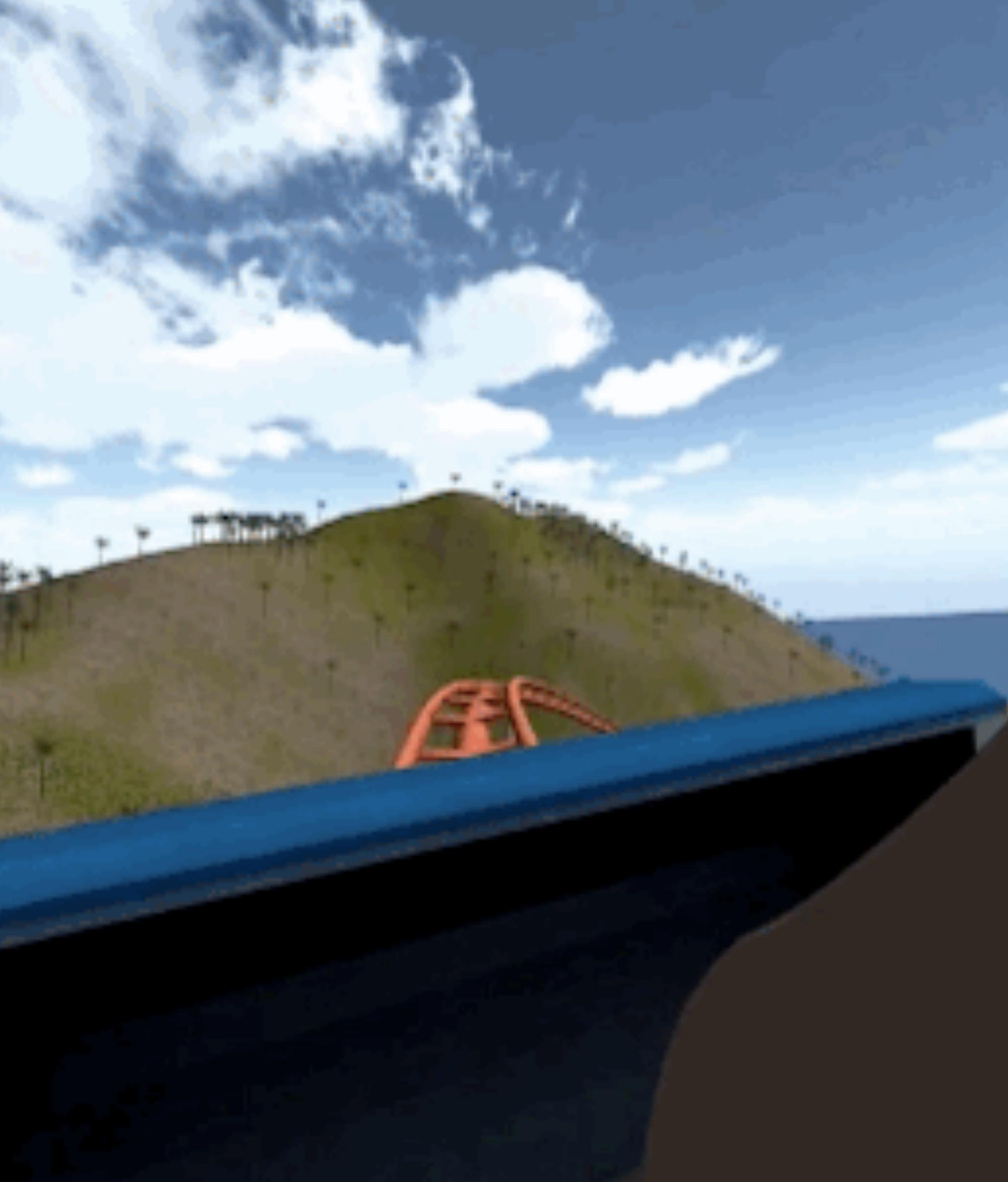
I'm planing to play mainly games like War Thunder or other 1st person view games, mainly Simulator games. This motion sickness they do mention more and more about feels like maby its to mutch and best you can do just play this simple games. Teleporting system in game sounds like not the best experiance but keeps you ok in VR. So how will be rift played with joystick if you get motion sick ?

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# Scientists Think They've Found A Way To Eliminate Virtual Reality Sickness

I'm nauseous... I'm nauseous...

By Ryan F. Mandelbaum June 27, 2016



^

33



**DK1 made me very VR sick. DK2 does not** self.oculus

submitted 3 years ago \* by [Dawiiz](#) 

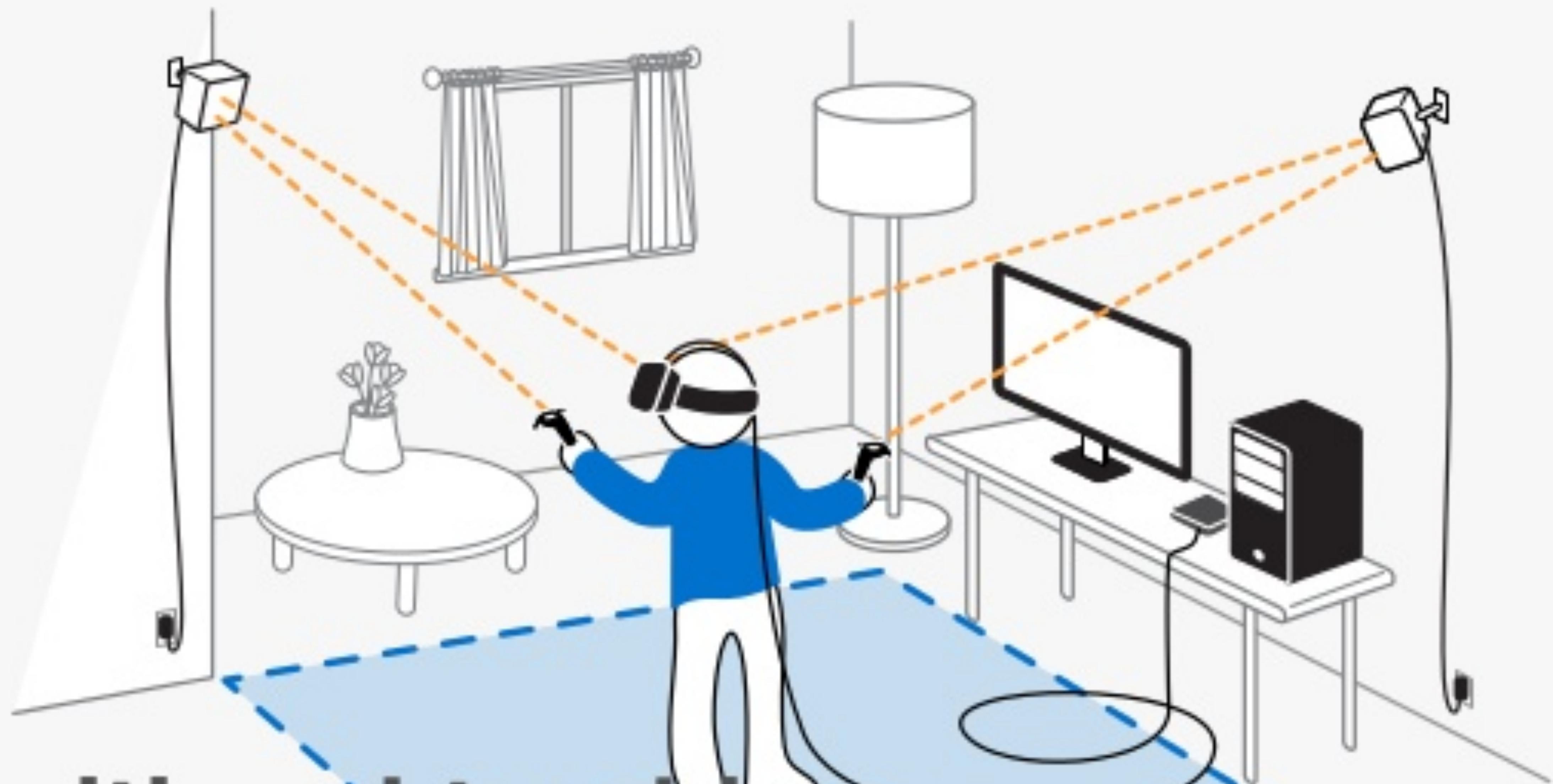
I have a DK1 and have tried to push my self through many VR demos. I always ended up feeling sick, some times for days. Today I got my DK2 and I had no problems with motion sickness. Will try playing for some hours and give more feedback :)

Update: After some hours of gaming I finally got motion sick. But recovery was super quick. DK1 left me sick for a long while.

[32 comments](#) [share](#) [save](#) [hide](#) [give gold](#) [report](#) [pocket](#)



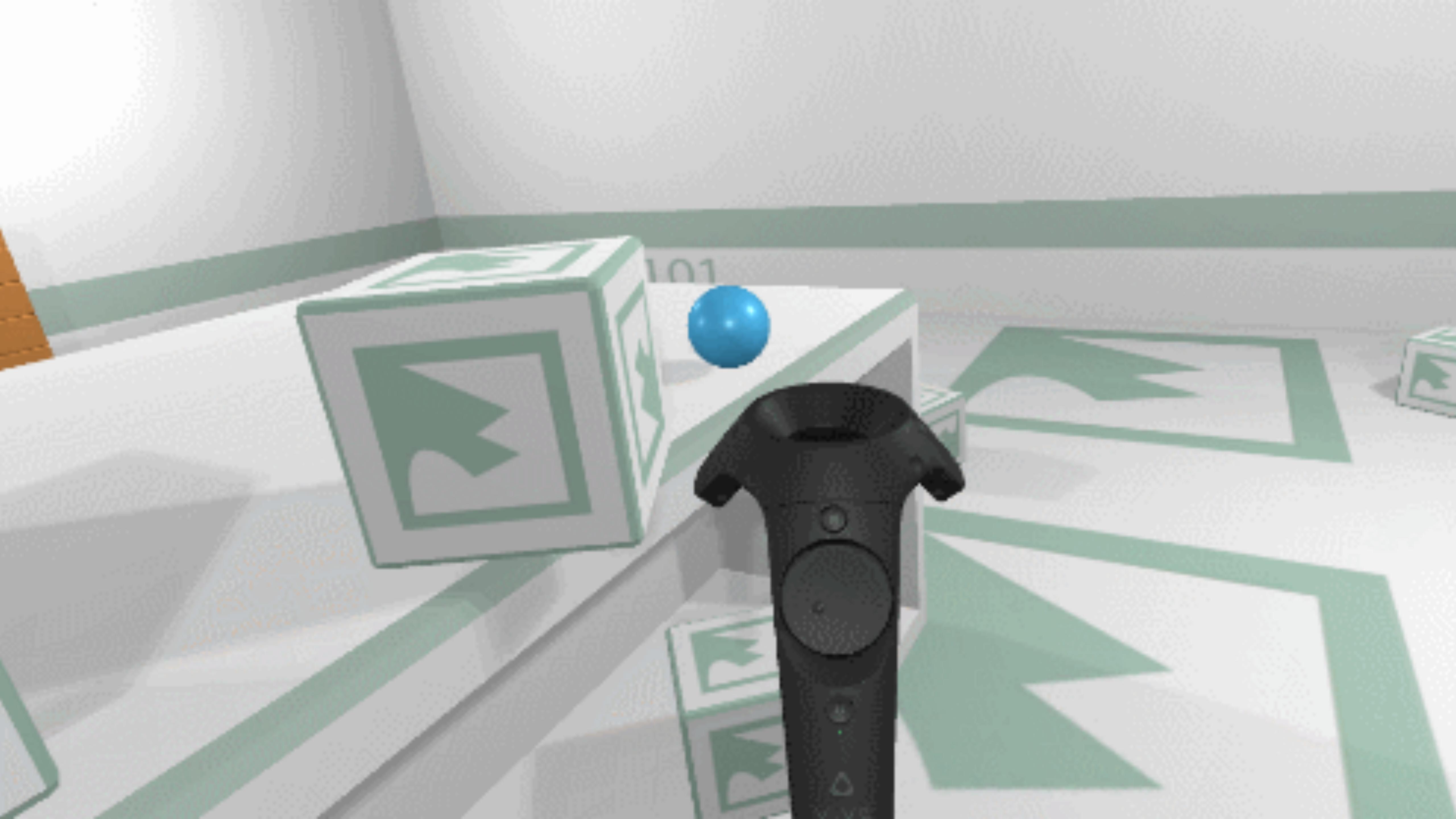


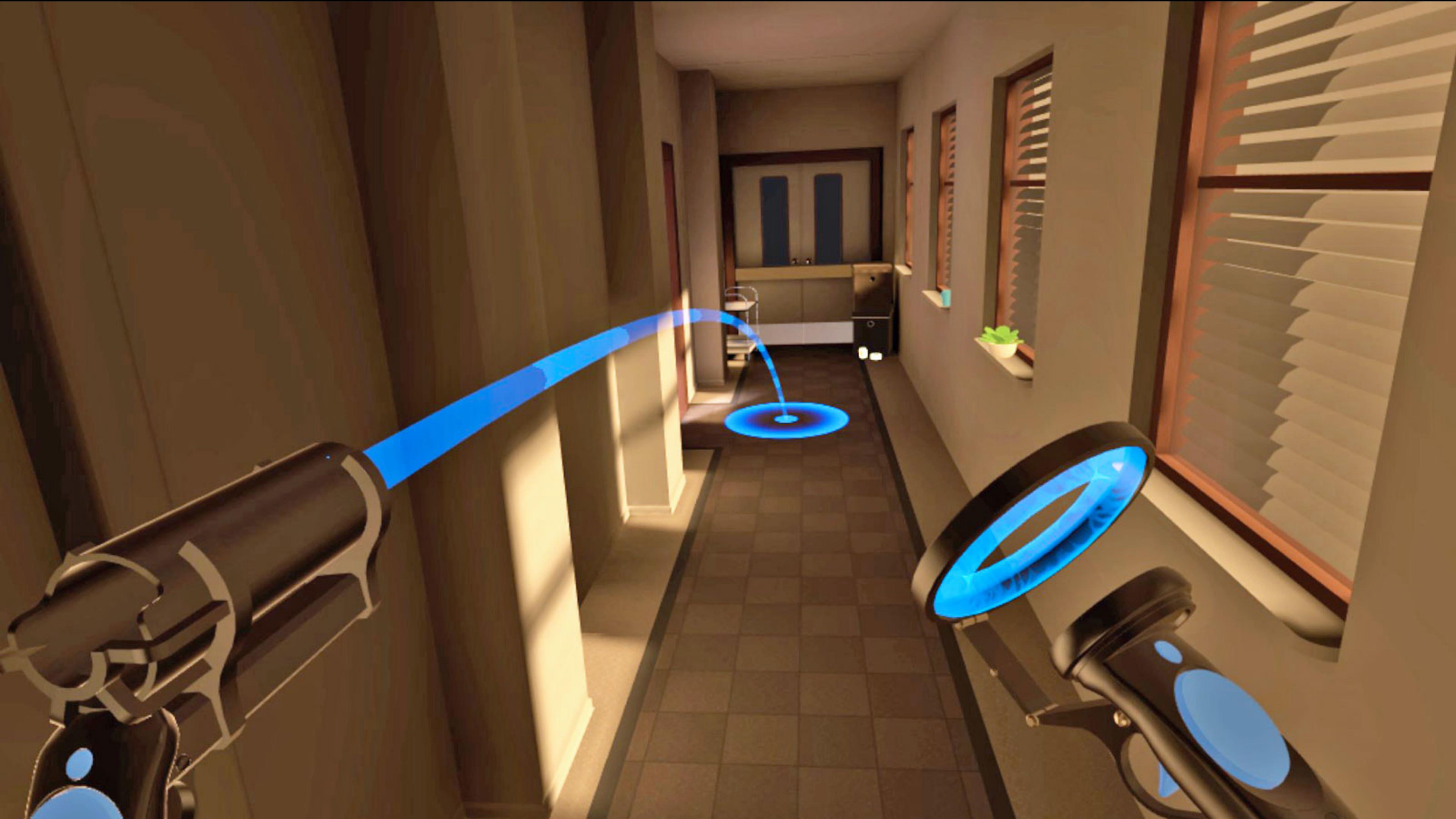


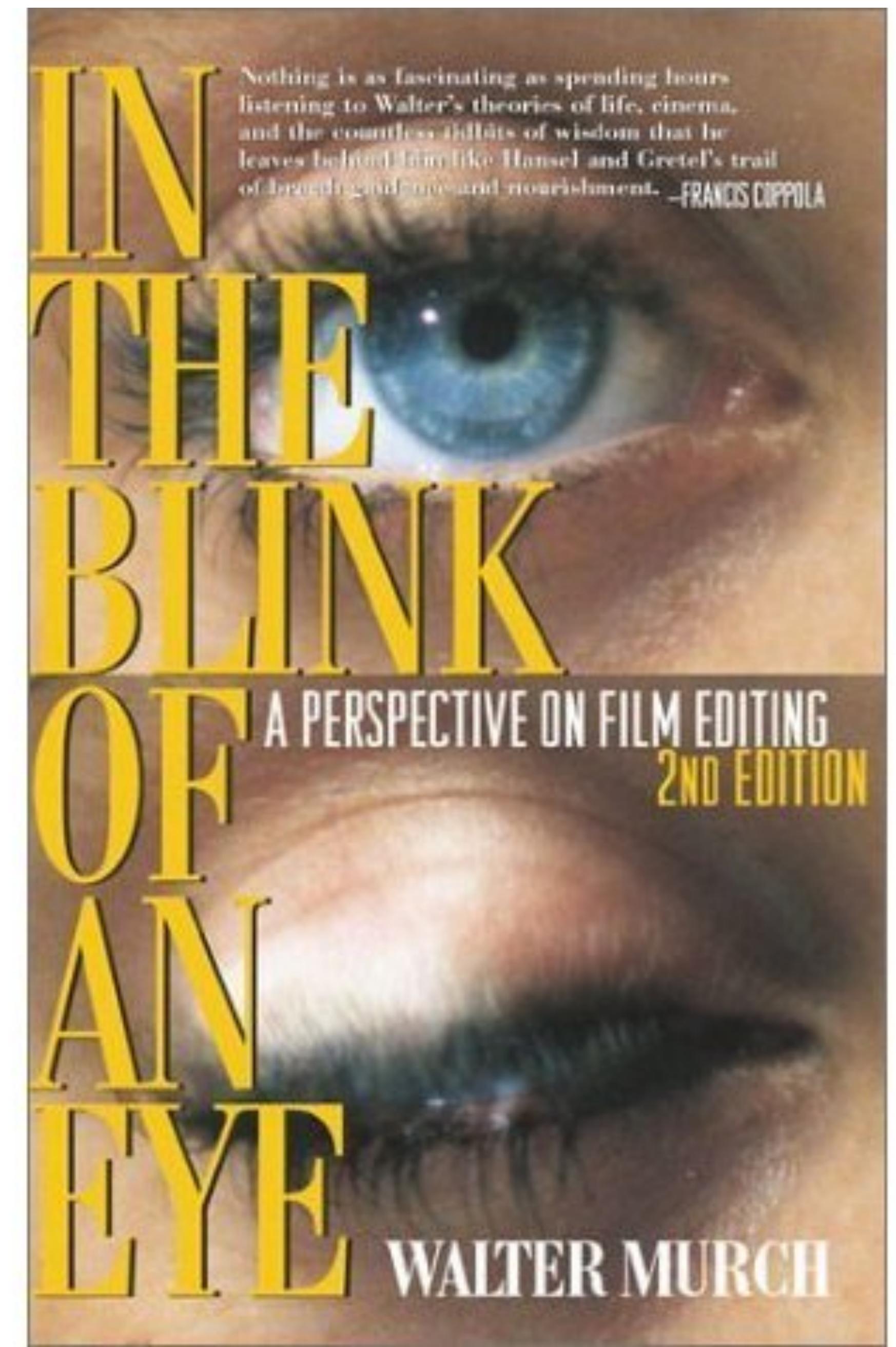
**positional tracking**



ROCKFISH  
GAMES







“So it seems to me that our rate of *blinking is somehow geared more to our emotional state and to the nature and frequency of our thoughts than to the atmospheric environment* we happen to find ourselves in.”

# Modality



File Edit View Special

System Disk

5 items

232K in disk

167K available

System Disk



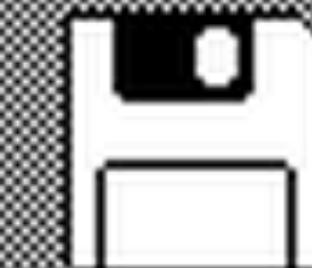
Empty Folder



System Folder



Disk Copy



Guided Tour



Font Mover



Fonts



SysVersion



My Folder



Trash

**bigscreen**







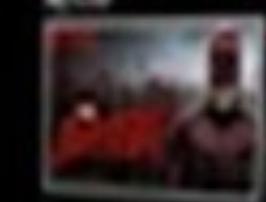
NETFLIX

NETFLIX

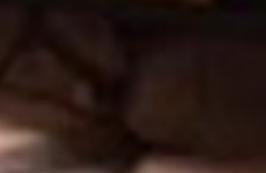
A vrolijk kerstfeest kan alleen maar een Netflix kerstfeest zijn. Kies voor de meest gezellige kerstfilms en series.

0

De meest gezellige kerstfilms en series.



NETFLIX

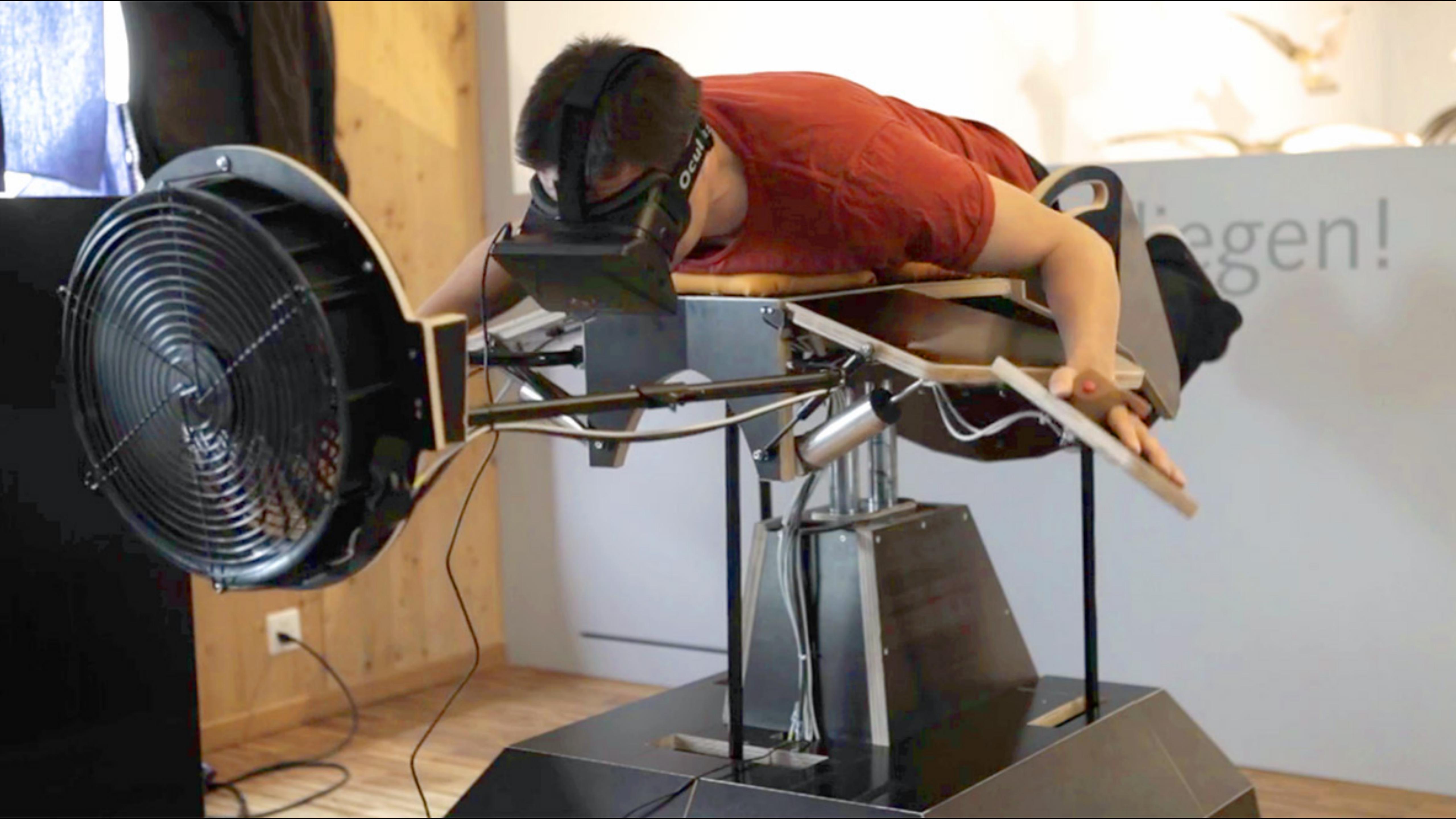


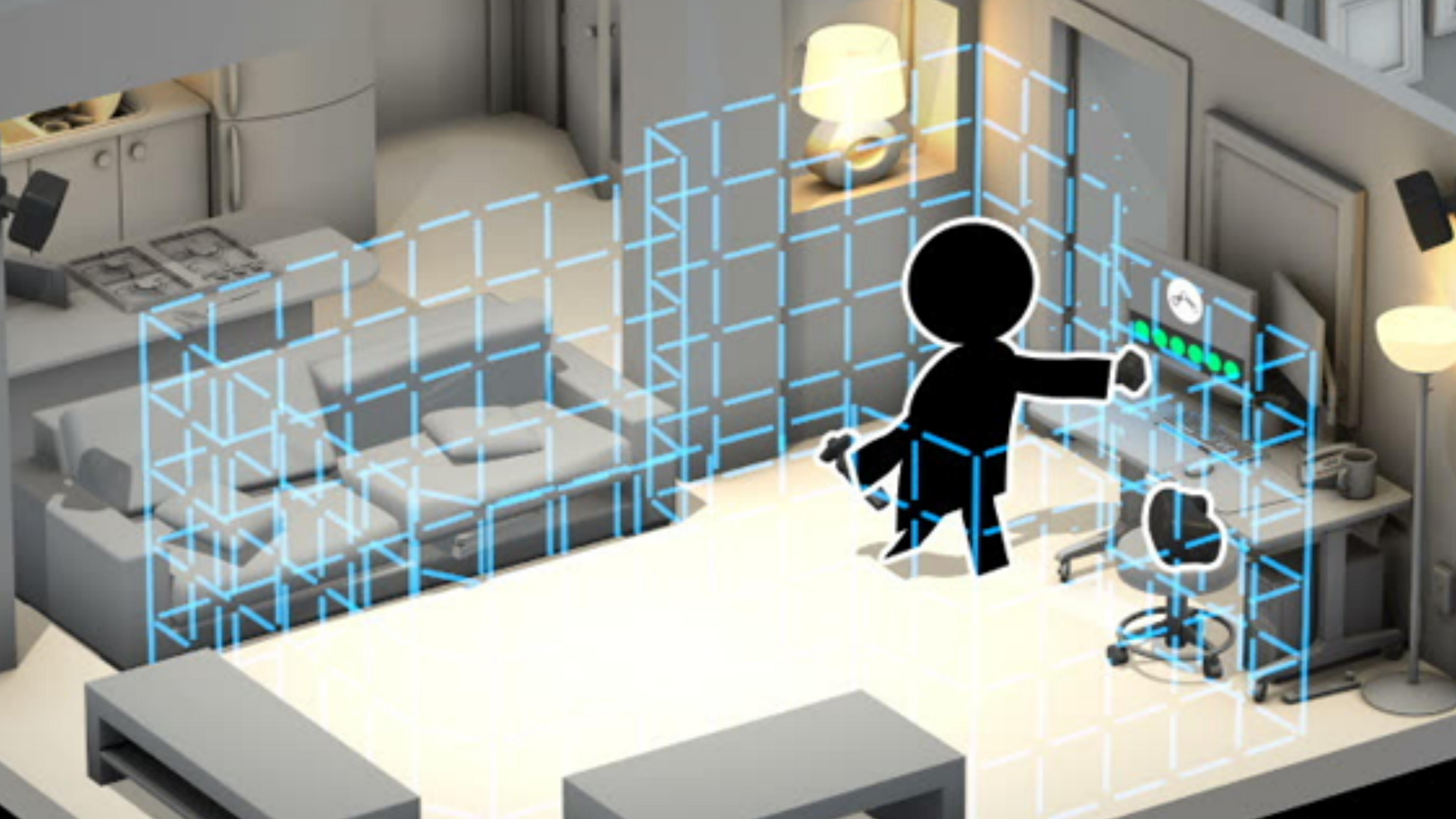
reaaaallly cute

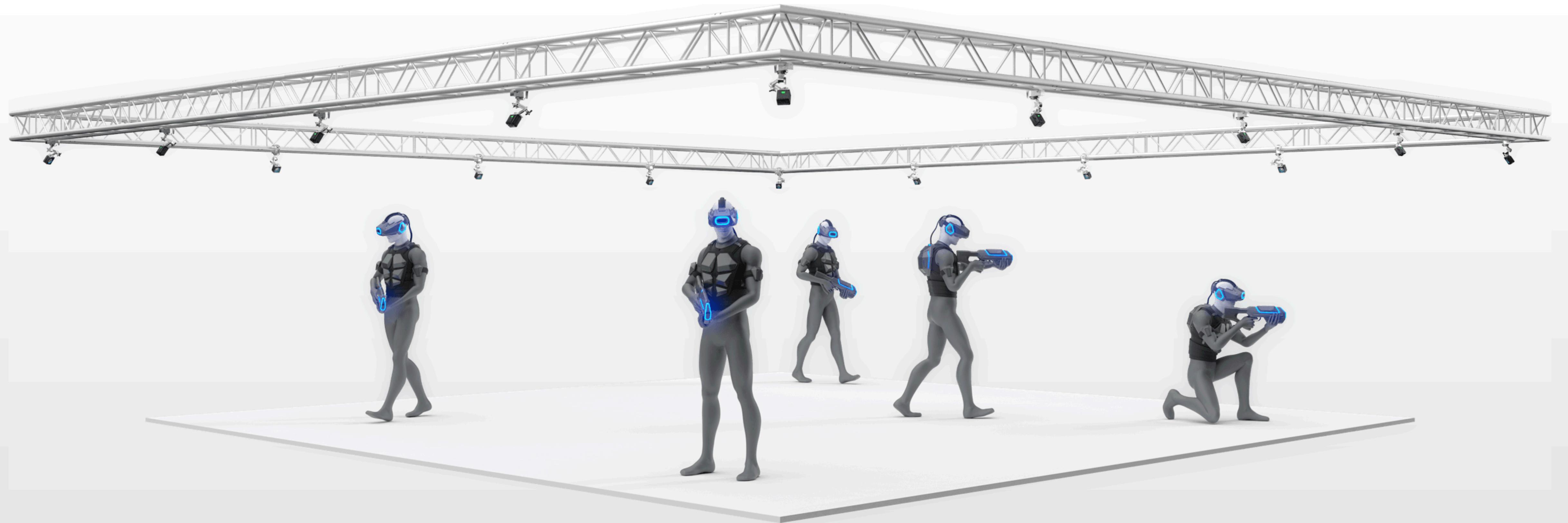


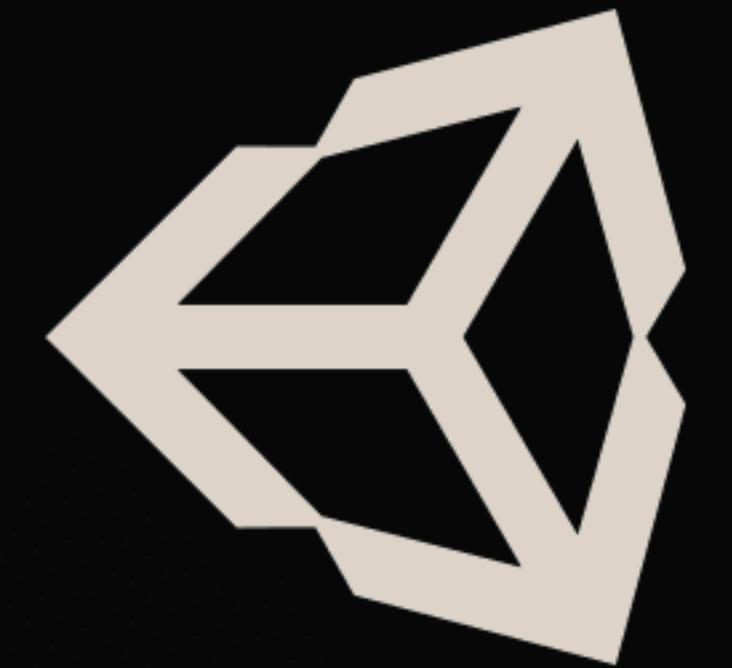












unity



# Vectors

In programming terms, you can think of Vectors as a way to store 2, 3, or 4 values in one easy-to-use package:

```
Vector2 someNumbers = new Vector2(1.0, 2.2);
Vector3 someOtherNumbers = new Vector3(5.3, 2.6, 12.0);
Vector4 evenMoreNumbers = new Vector4(7.4, 2.1, 12.0, 9.8);
```

# Vectors

We can use vectors to:

- Store multiple numbers in one variable
- Describe the position of something in our world
  - For example: (2.1, 8.9, 7.4) represents the point in space 2.1 units along the X-axis, 8.9 units along the Y-axis, and 7.4 units along the Z-axis.

# Vectors

We can use vectors to:

- Describe a direction
  - For example:  $(0.0, 1.0, 0.0)$  represents a point 1 unit directly above (along Y) the origin.
  - If we drew an arrow from the origin to this point, it would point straight up.
  - It doesn't matter how long the Vector is:
    - $(0.0, 1.0, 0.0)$  and  $(0.0, 5.2, 0.0)$  are different points, but they both describe the same *direction* (straight up).

# Vectors

Unity has some built-in direction shorthands:

```
Vector3 example = Vector3.up;
```

is the same as:

```
Vector3 example = new Vector3(0.0, 1.0, 0.0);
```

# Vectors

Other shorthands:

`Vector3.up` (pointing along Y-axis)

`Vector3.forward` (pointing along Z-axis)

`Vector3.right` (pointing along X-axis)

`Vector3.one` (Equal to  $(1.0, 1.0, 1.0)$ )

# RayCasting

**RayCasting** is when we shoot an invisible line into our scene to see if we hit something in that direction.

To understand RayCasting, you must understand **Vectors**.

# RayCasting

`Physics.Raycast()` is a function built in to Unity.  
There are many, many different forms it can take. Here is  
the easiest:

```
Physics.Raycast(Vector3 originOfTheRay, Vector3 directionOfTheRay);
```

All this function actually does is return true or false to  
answer “did this Ray hit anything?”

# RayCasting

To store information about *what* was hit, and more importantly *where* the hit is in space, we have to do two things:

1. Declare a variable of the type `RaycastHit` to store the information about the hit point.
2. Use a slightly different version of `Physics.Raycast()` to pass the hit info out of it:

```
RaycastHit hitInfoVariable  
Physics.Raycast(Vector3 originOfTheRay, Vector3 directionOfTheRay, out hitInfoVariable)
```

# RayCasting

So if wanted to Raycast from a GameObject (for example a Vive tracker or the user's headset POV):

We want to shoot a ray from:

**gameObject.transform.position**

in the direction of:

**gameObject.transform.forward**

(**gameObject.transform.forward** is the local Z-axis of the *object*, which may be different from the *world* Z-axis, which is `Vector3.forward`)

# RayCasting

```
void Update() {  
    RaycastHit hit;  
    if ( Physics.Raycast(gameObject.transform.position, gameObject.transform.forward, out hit) ) {  
  
        Debug.DrawLine(gameObject.transform.position, hit.point, Color.red);  
        Debug.DrawRay(hit.point, hit.normal, Color.green);  
  
    }  
}
```

# RayCasting

the `hit` variable that stores information about the result of the Raycast has a few useful properties:

`hit.point` (The coordinates of the collision as a `Vector3`)

`hit.normal` (A `Vector3` direction that describes the direction coming *straight out* of the face of the hit object)

# RayCasting

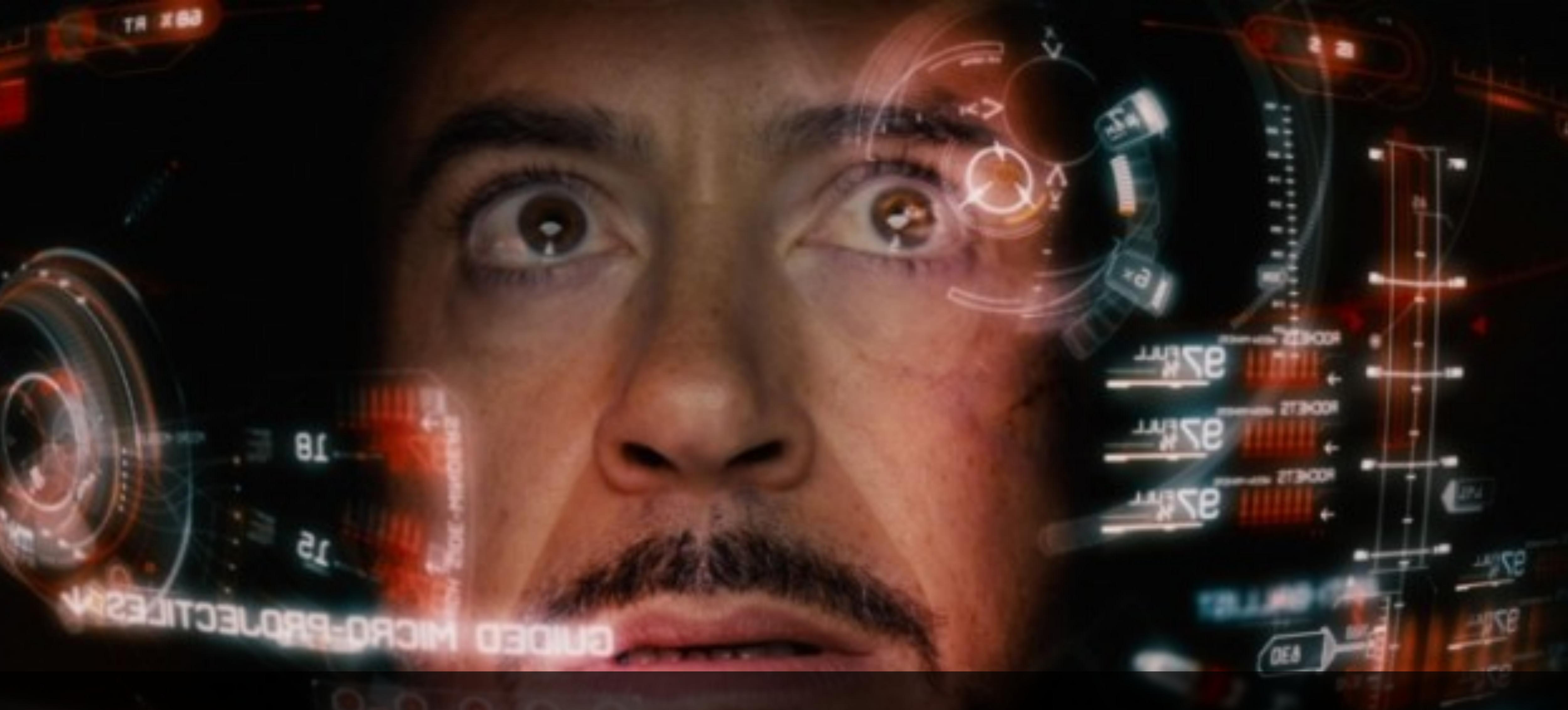
These visual Debug functions help you see what's going on.  
They will draw lines in your *Editor*, but never in the  
actual *Game* view:

```
Debug.DrawLine(Vector3 lineStartCoordinate, Vector3 lineEndCoordinate, Color color);
```

```
Debug.DrawRay(Vector3 lineStartCoordinate, Vector3 lineDirection, Color color);
```

Design For Humanity - Parts 4, 5, 6, 7

<http://bit.ly/1T0gJ6E>



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