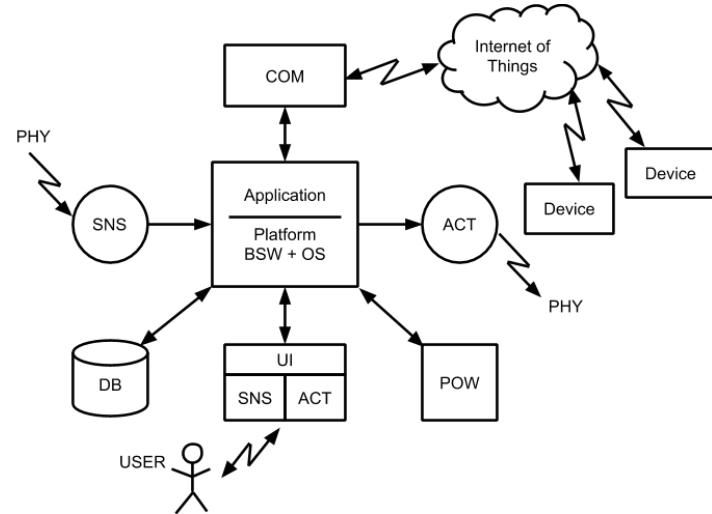


# Interacțiunea cu Utilizatorul

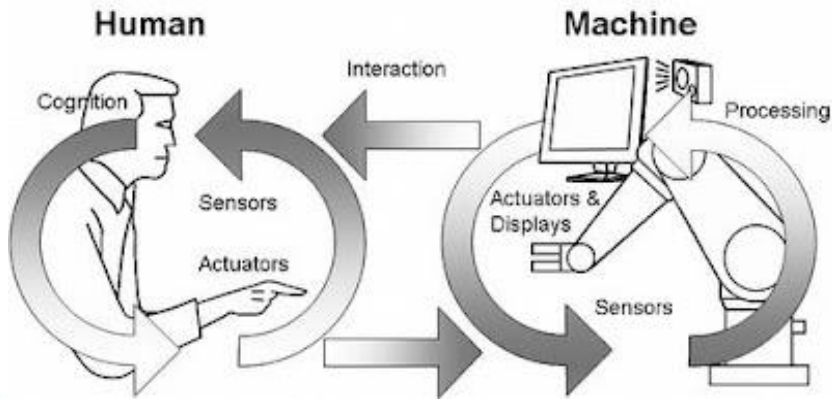
Andrei Bragarenco

# Tipuri de interacțiuni

- Interacțiuni cu Utilizatorul
- Interacțiuni cu Mediul
- Interacțiuni cu Dispozitive (IoT)



# Schimb de informație utilizator cu sistemul



- Interfețe binare
- Interfețe binare scalate
- Interfațe digitale
- Interfata standard STDIO
- Interfețe analogice
- Interfețe complexe

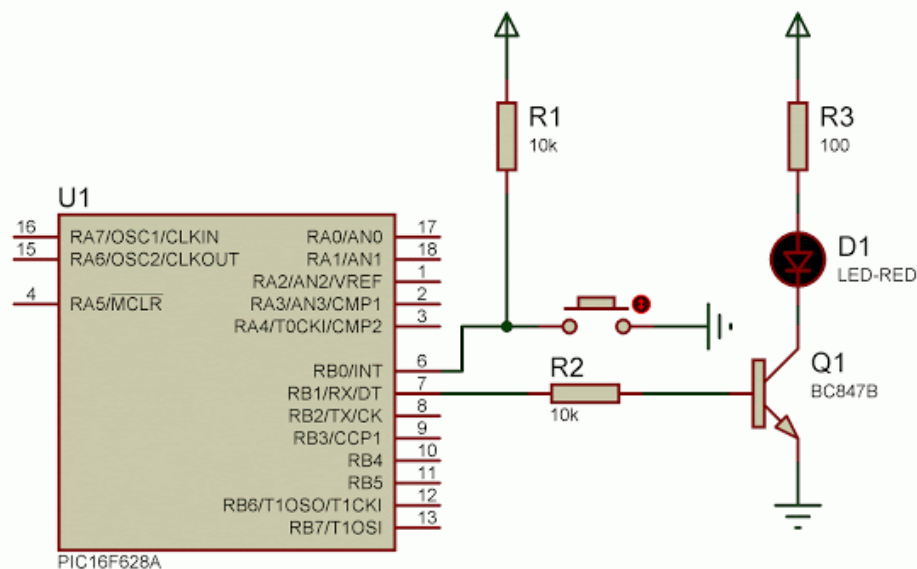
# Personal Computer - PC



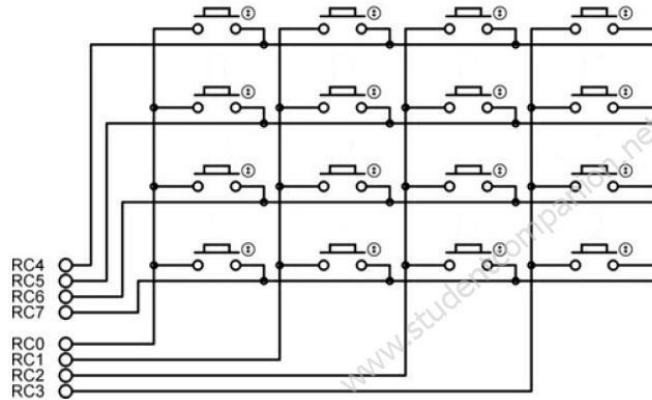
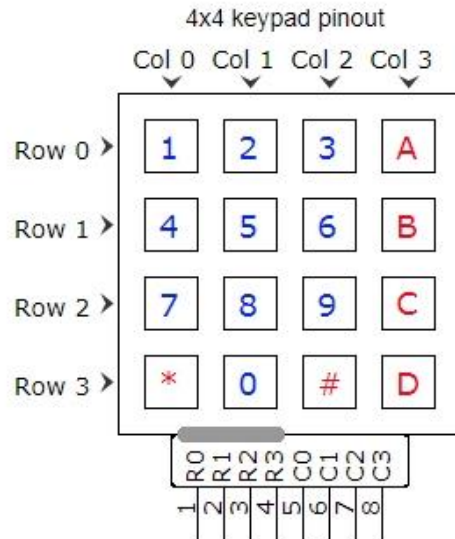
# Interacțiune PC



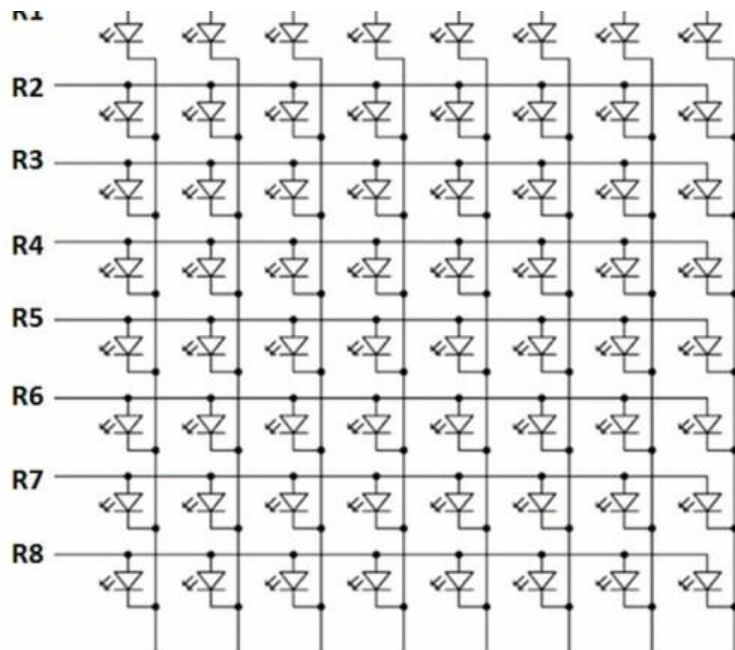
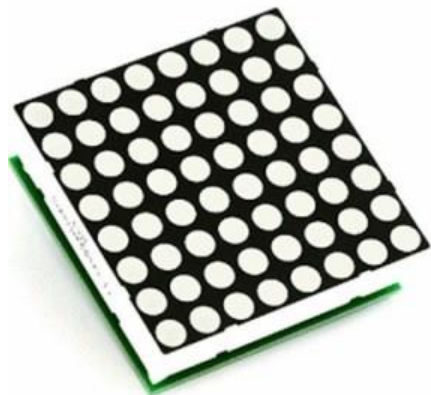
# Interfețe Binare – Buton / LED



# Matrice butoane

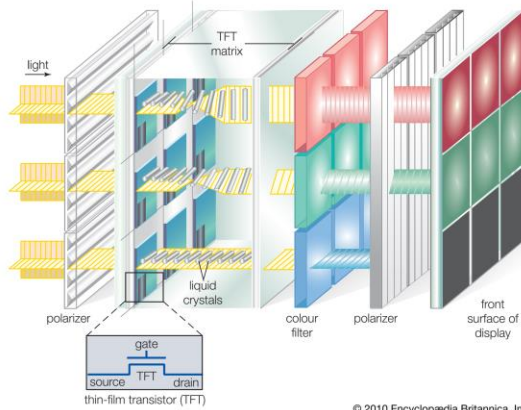


# Matrice LED

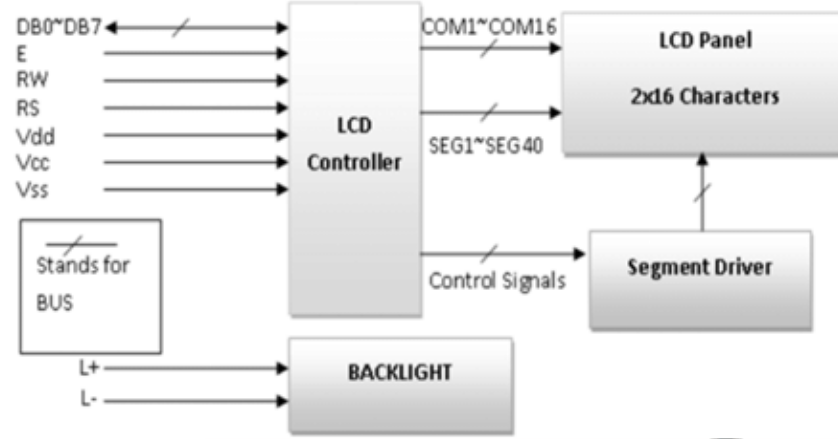




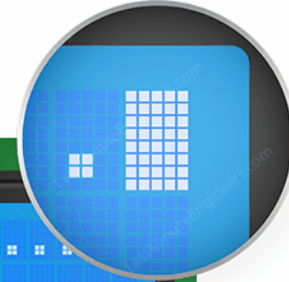
# Matrice LCD



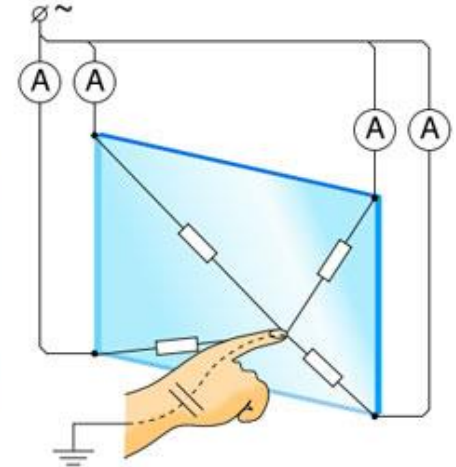
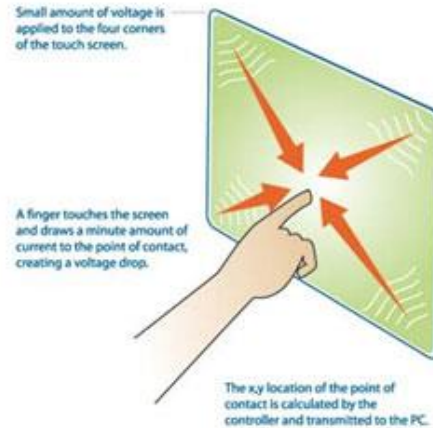
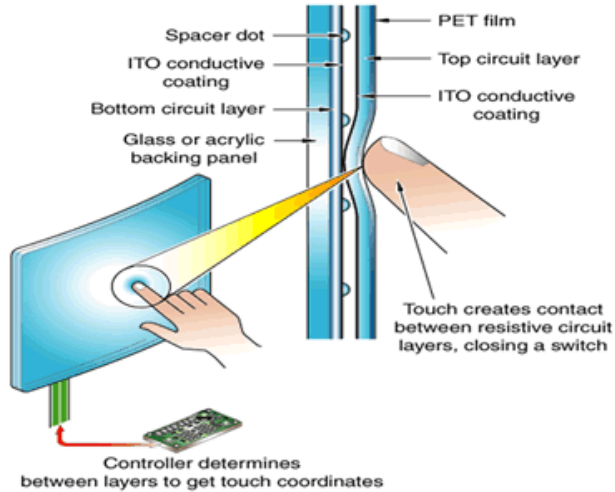
© 2010 Encyclopædia Britannica, Inc.



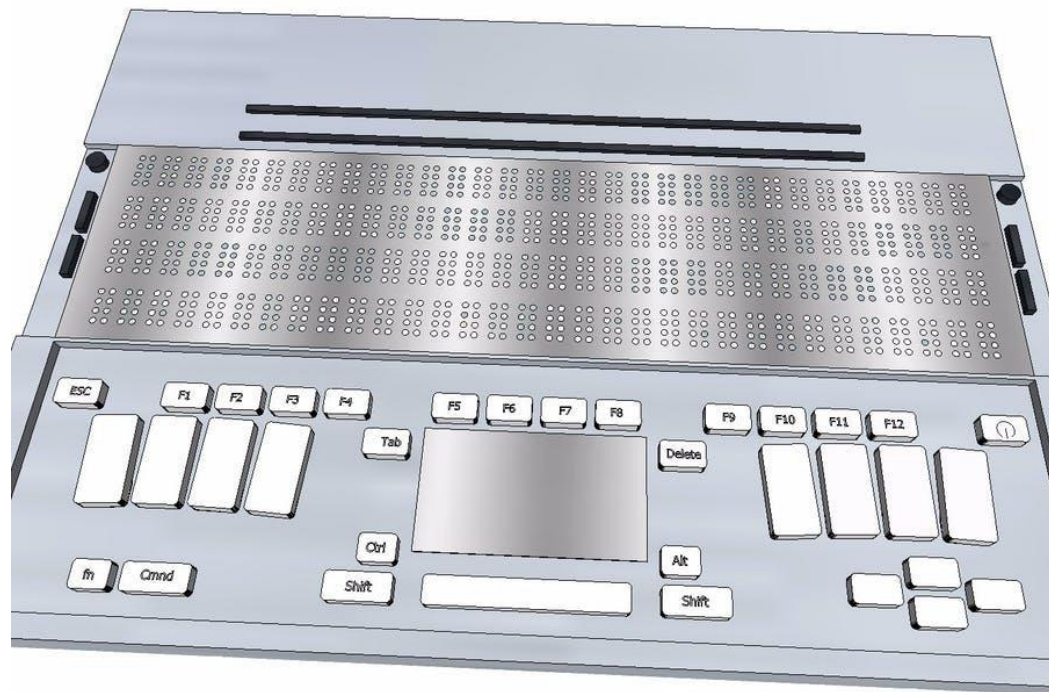
Last Minute  
**ENGINEERS.com**



# Resistive touch sensor



# Interacțiuni Tactile



# Varietăți



# Virtual Reality





# Interacțiuni Vizuale



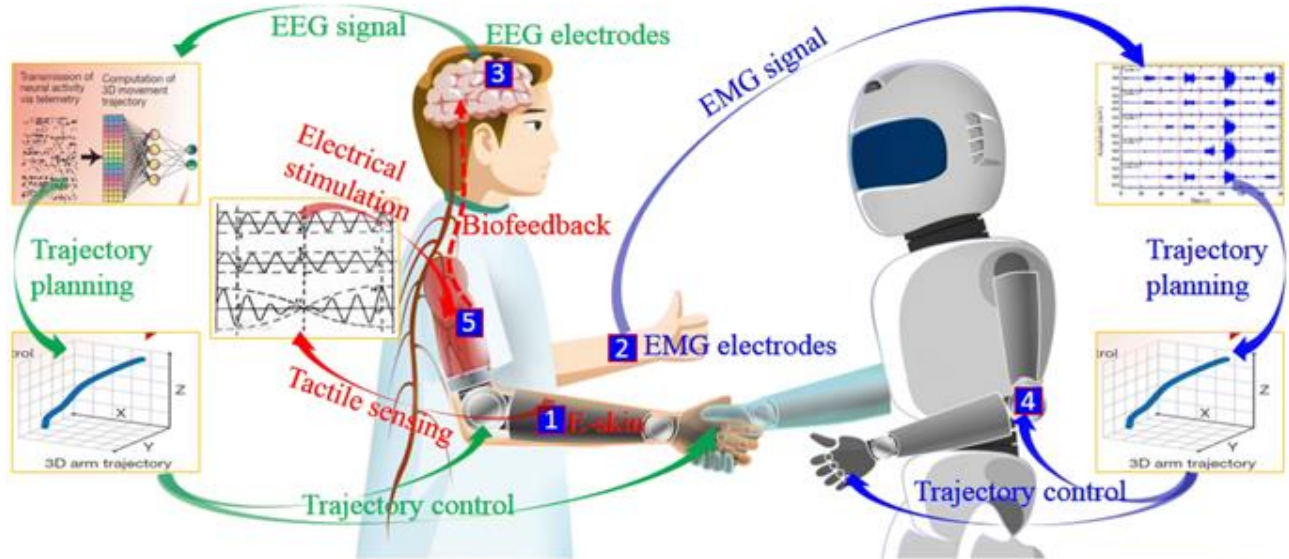
KINECT  
SPORTS



# Boxe Smart



# EMG Human Machine Interface



Pressure sensor<sup>[71]</sup>



EMG electrode<sup>[150]</sup>



Epidermal electronics<sup>[14]</sup>



E-skin<sup>[10]</sup>



Motion sensor<sup>[36]</sup>



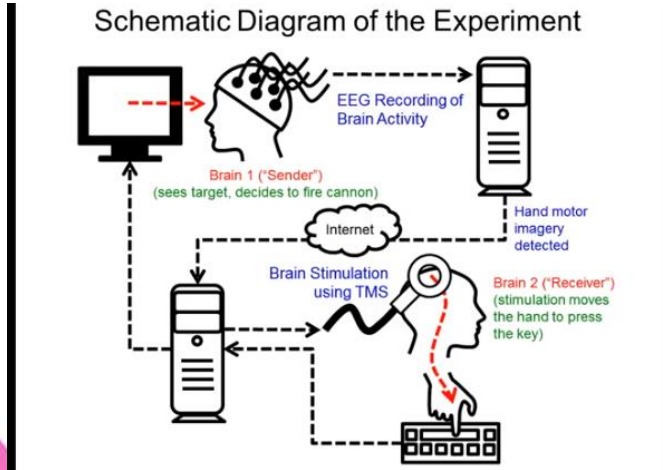
Nervous sensor<sup>[188]</sup>



# EEG – Human Machine Interface

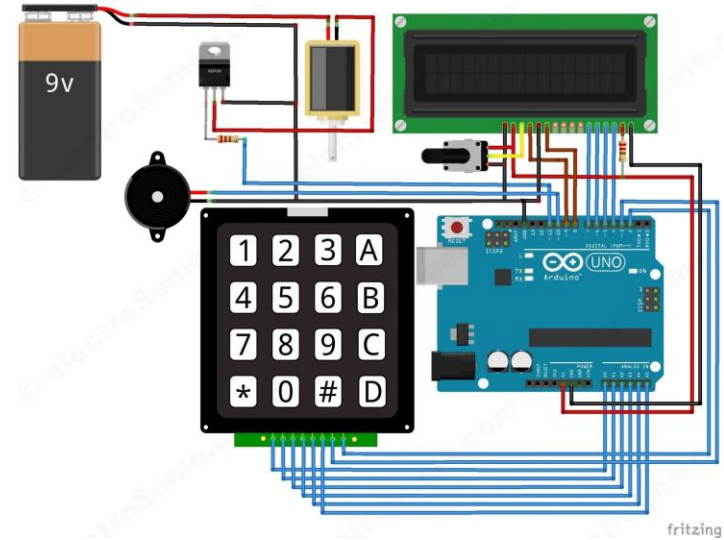
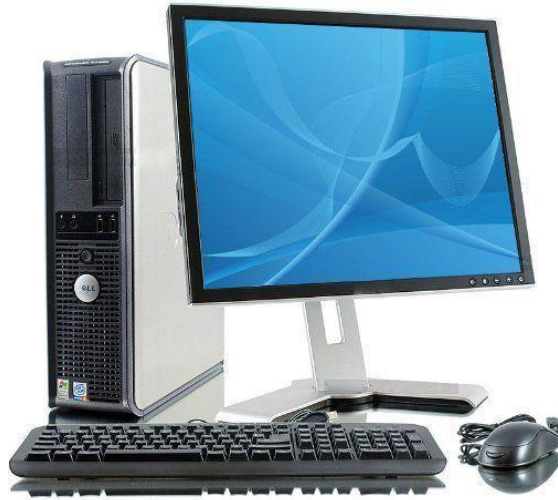
Researchers create first ever human-to-human interface, use it to play a game

<https://www.youtube.com/watch?v=rNRDc714W5I>

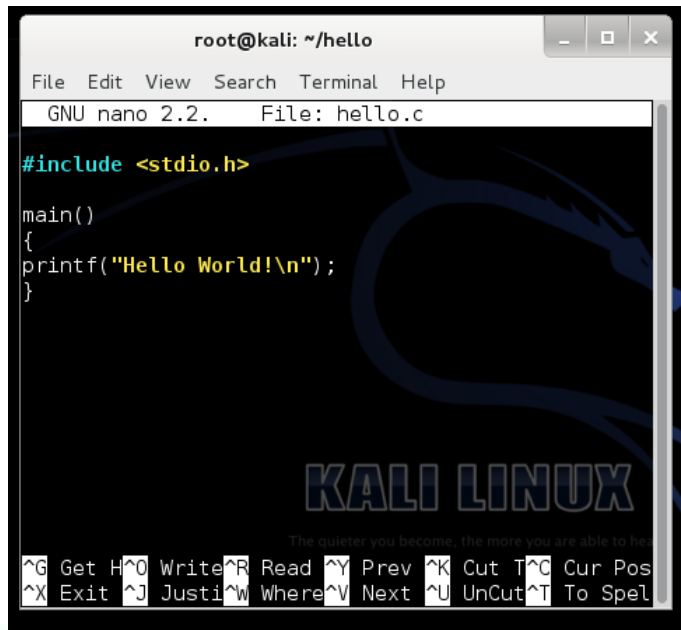


<https://www.slashgear.com/researchers-create-first-ever-human-to-human-interface-use-it-to-play-a-game-27295122/>

# Desktop PC vs. Micro PC



# Interfața Standard de intrare/ieșire - STDIO



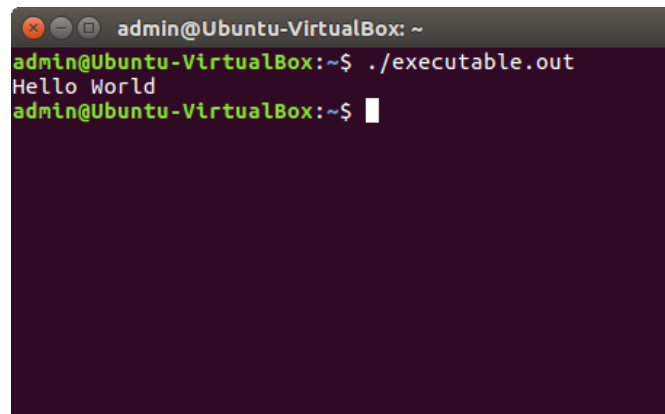
```
root@kali: ~/hello
File Edit View Search Terminal Help
GNU nano 2.2. File: hello.c

#include <stdio.h>

main()
{
printf("Hello World!\n");
}

KALI LINUX
The quieter you become, the more you are able to hear.

^G Get H^O Write^R Read ^Y Prev ^K Cut T^C Cur Pos
^X Exit ^J Justi^W Where^V Next ^U UnCut^T To Spel
```

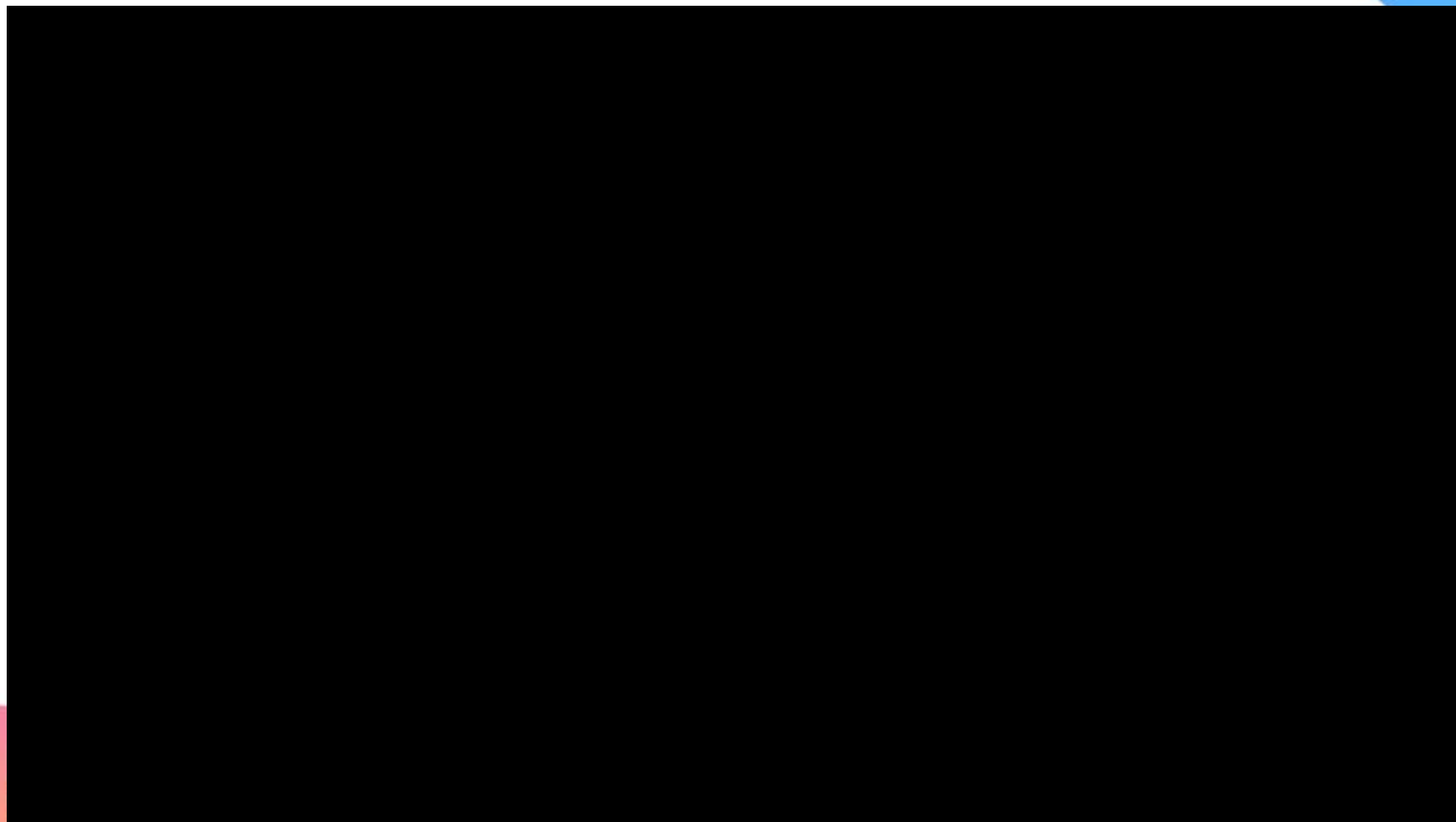


```
admin@Ubuntu-VirtualBox: ~
admin@Ubuntu-VirtualBox:~$ ./executable.out
Hello World
admin@Ubuntu-VirtualBox:~$
```



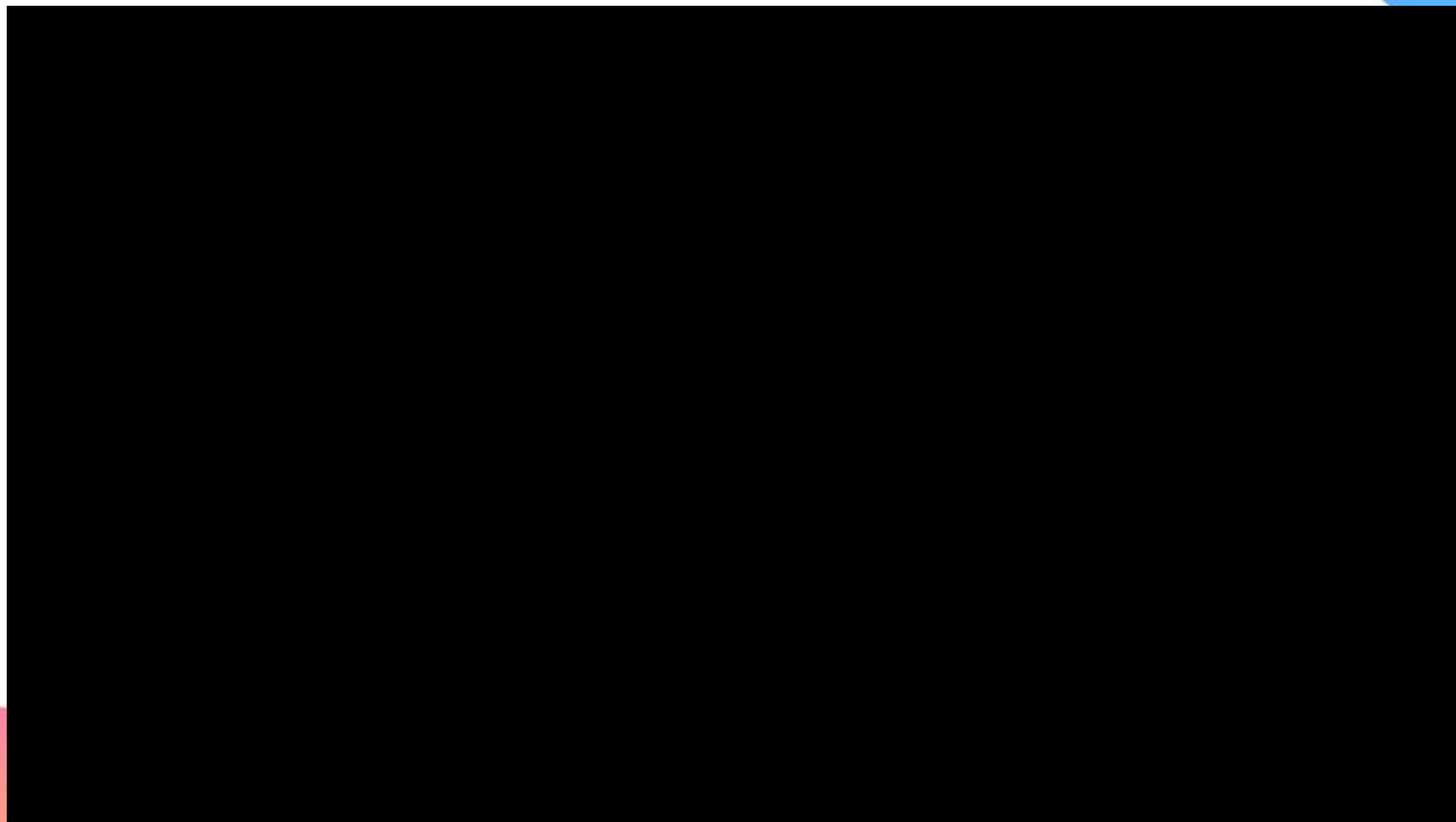
# Interacțiuni Tactile

<https://www.youtube.com/watch?v=ZSFpxVc0Gm8>



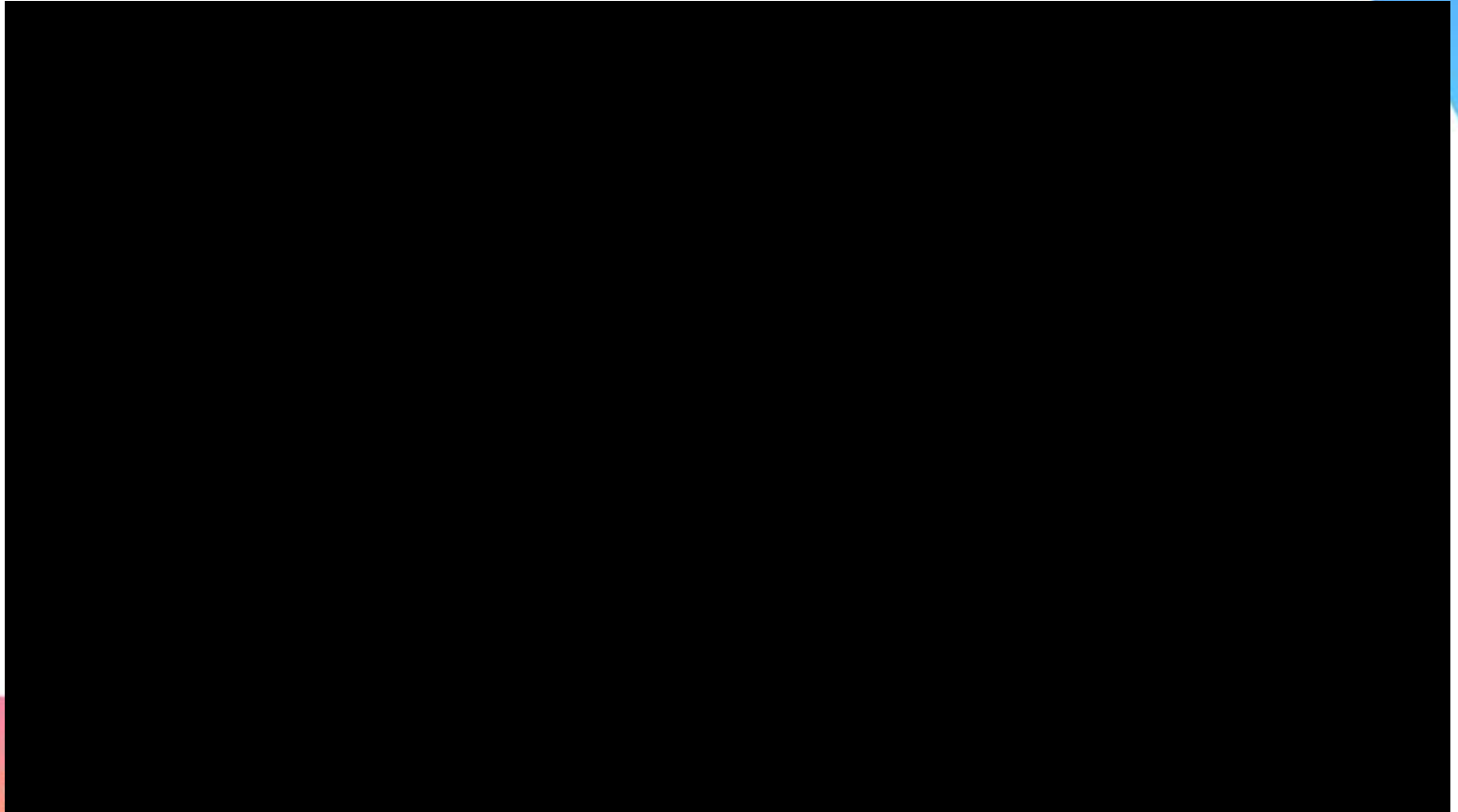
# Interactiuni Sunet

<https://www.youtube.com/watch?v=6-1bvYNqw0A>



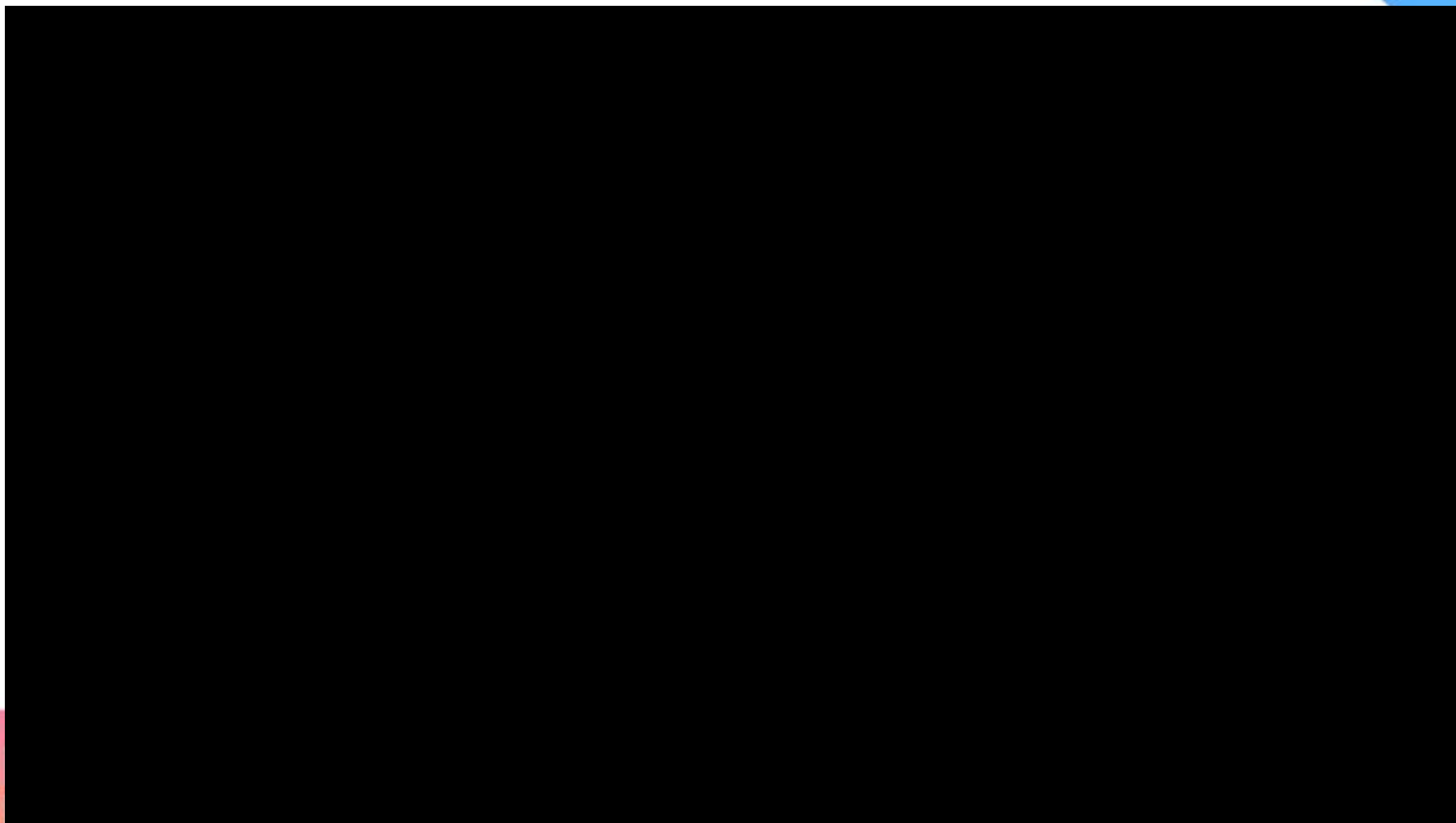
# Virtual Reality vs Augmented reality

<https://youtu.be/f9MwaH6oGEY>



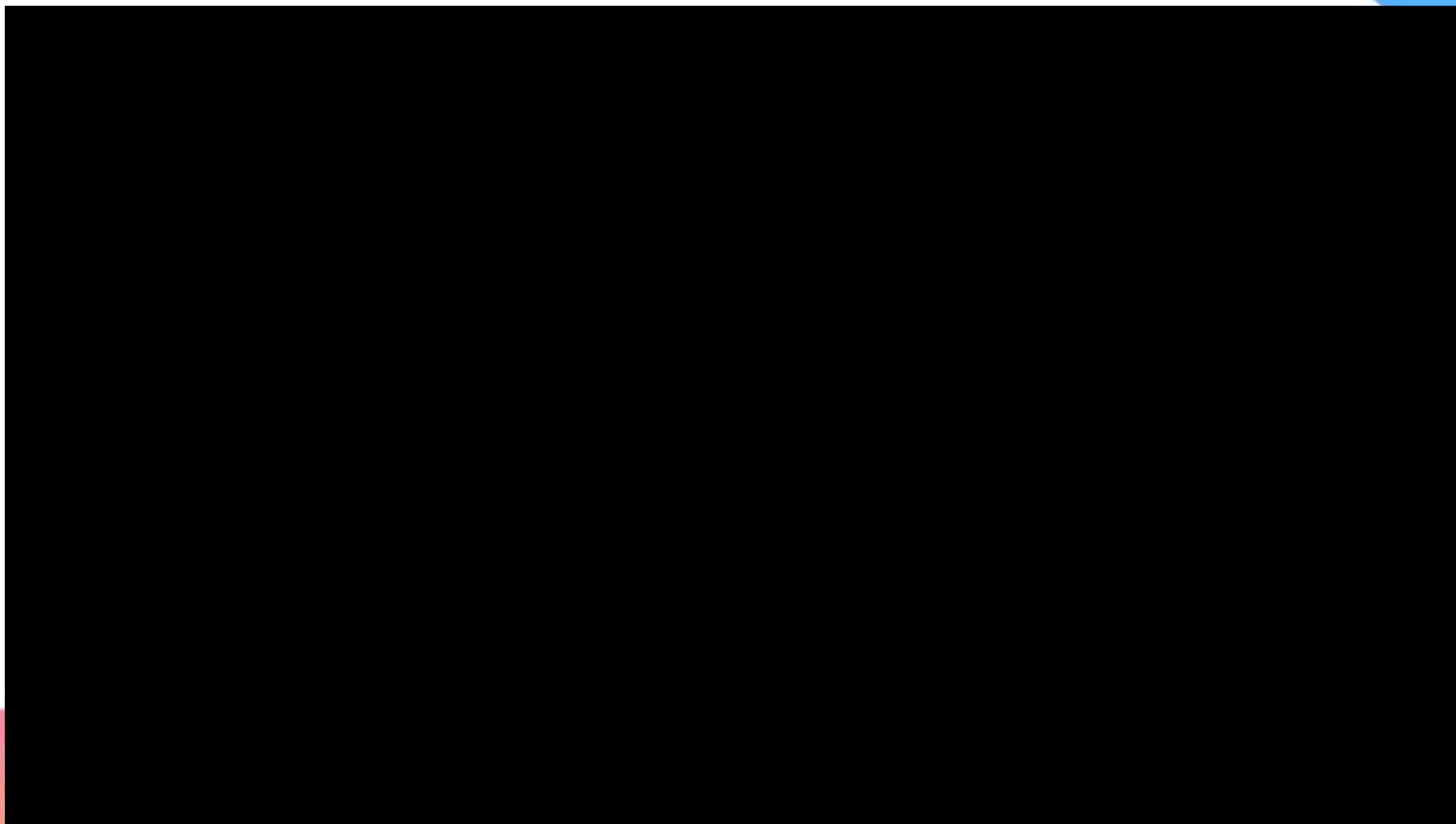
# Interacțiuni Vizuale - Wii

<https://youtu.be/73yDRm8KaWY>



# Interacțiuni Vizuale - Kinect

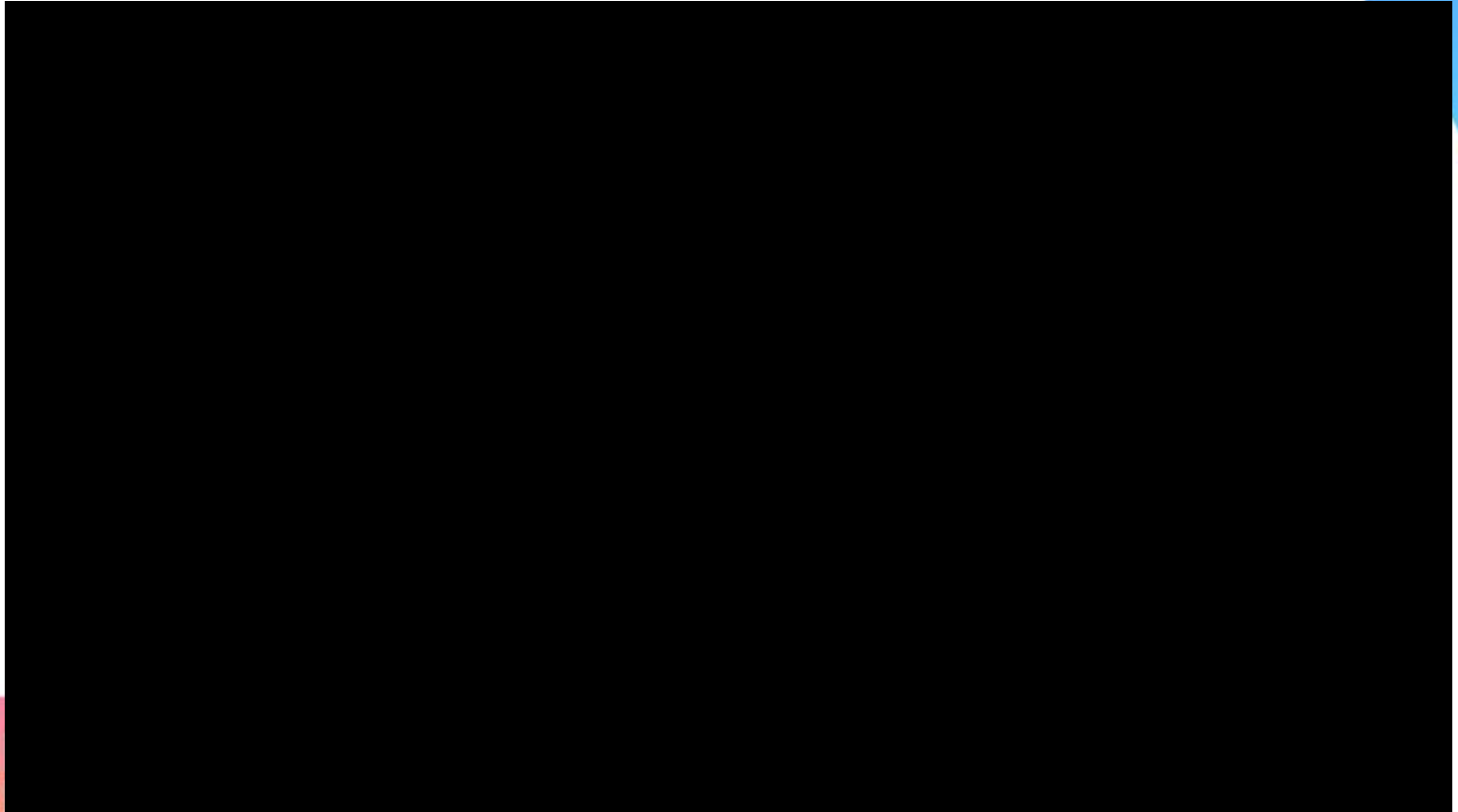
<https://youtu.be/Ql2bUcLH0Pc>





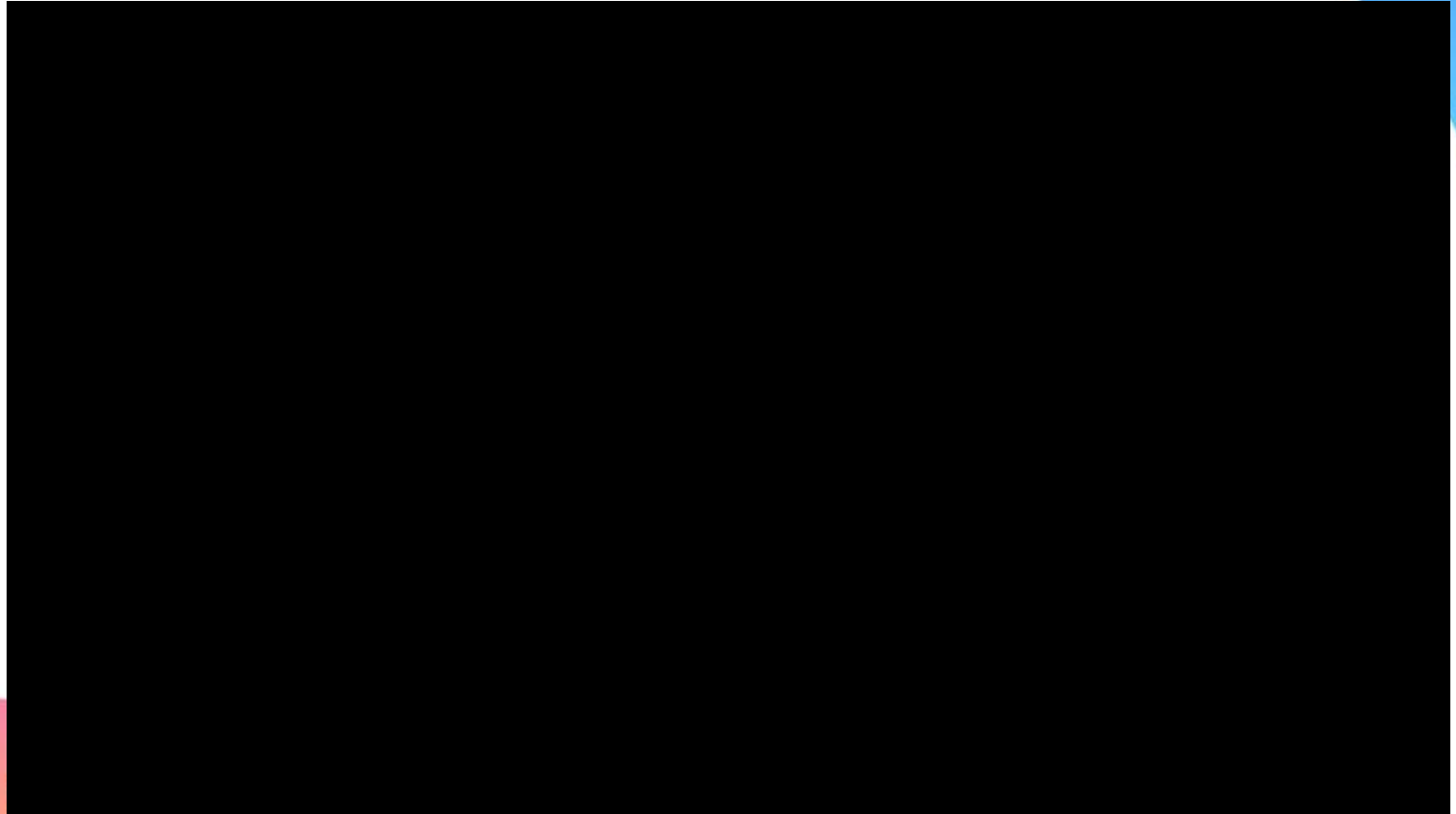
# Kinect products

[https://youtu.be/F\\_brnKz\\_2tI](https://youtu.be/F_brnKz_2tI)



# Kinect products

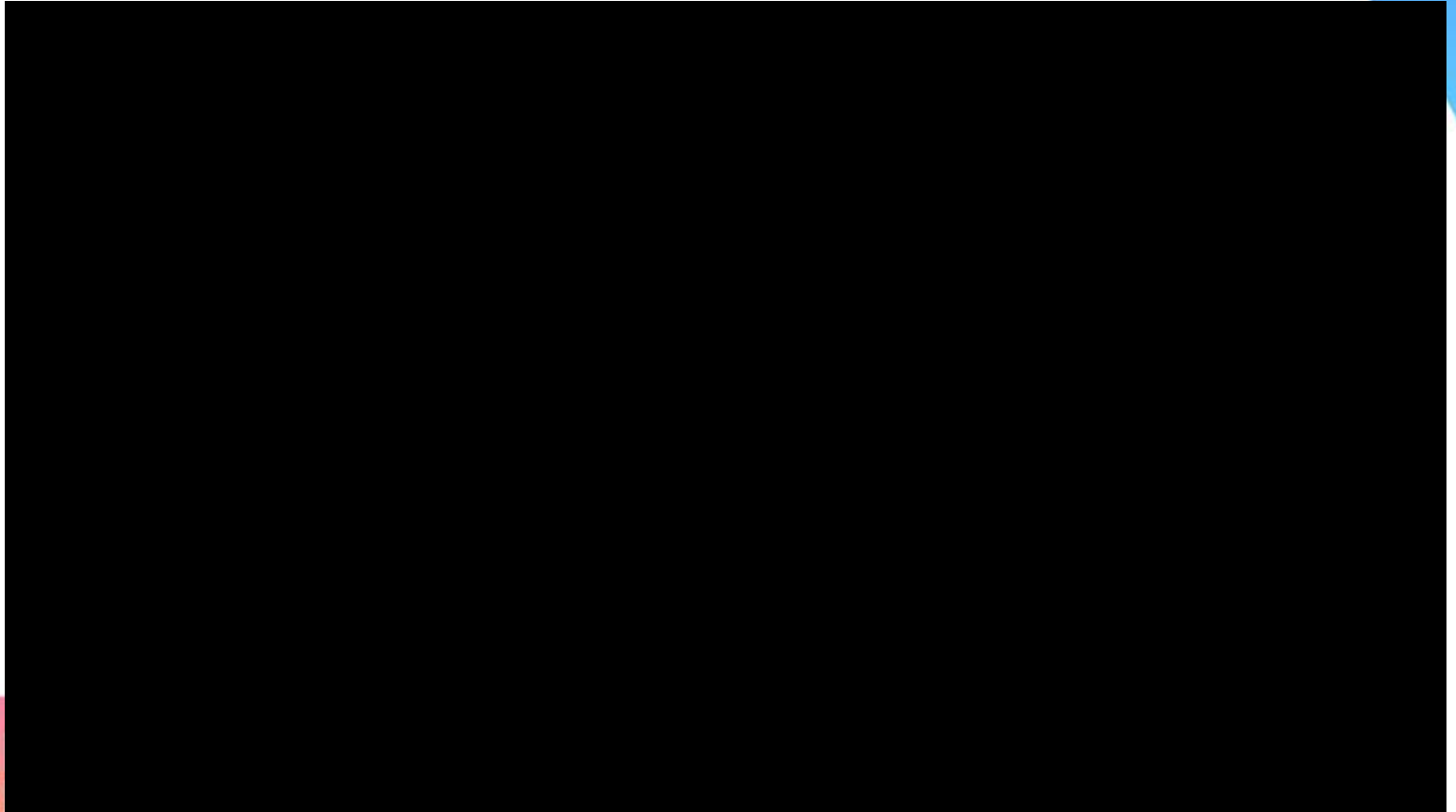
<https://youtu.be/rSQNi5sAwuc>



<https://youtu.be/dn7l9q9RF5M>

# Human – Human Interface

# Movie: Gamer



<https://youtu.be/oIAIGXpB3Fw>

# Human – Human Interface

# Movie: Nerve

