

* Virtual Reality

→ Computer-simulated reality

↳ Computer technology that replaces an environment: real or imagined

$$\boxed{VR} = \boxed{\text{Virtual World}} + \boxed{\text{Real world i/s}}$$

→ visualization & analysis.

→ virtual simulation of real life scenarios.

↳ Interaction with digital objects.

↳ Cut off from the real world.

→ OPTICS

→ DISPLAYS

→ Tracking, performance

VR - 3D display Technology

* Optics

↳ Lens, field of view, focal length, comfort
↳ optical distortion, Cost

* VR Display

Lenze → focus on a display close to your eye.

↳ Low persistence

↳ full image ⇒ portion of the image in an moment in time.

* Tracking

↳ VR system rely on chip.

→ ↳ Inertial Measurement Unit (IMU)

→ Sword of Damocles

→ Stereoscope

3 DOF vs 6 DOF

→ How accurately VR device can track you
x, y, z - axis.

3 DOF → Head rotation tracked

6 DOF → Track around the room

High NUR systems allows this.

6 DOF → Head Rotations & positions are tracked.

3 DOF

→ VR Headset detects rotation.

↳ Electronic device ⇒ (IMU) → ^{ting} Sensor

IMU ⇒ Quickly & accurately detecting rotations.

↳ It does this by combining the data from an on board accelerometer, magnetometer & gyroscope.

3 DOF ⇒ ~~Position~~ not position
Rotation

6 DOF ⇒ Oculus Rift

↳ Constellation system -

Rot & Position Rift ⇒ Infrared LEDs

HTC Vive ⇒ Track → Lighthouse, Infrared light

desktop ⇒ Optical & IMU tracking
More powerful

*] VR Development Platform

- ① Code
- ② Graphical Editor based Environment

① **UNITY** ⇒ Game Engine
3D ↪ SW framework that makes it easy to develop games.
Goal → Reduce iteration time.

- ② Unreal Engine ② CryEngine ③ Lumberyard

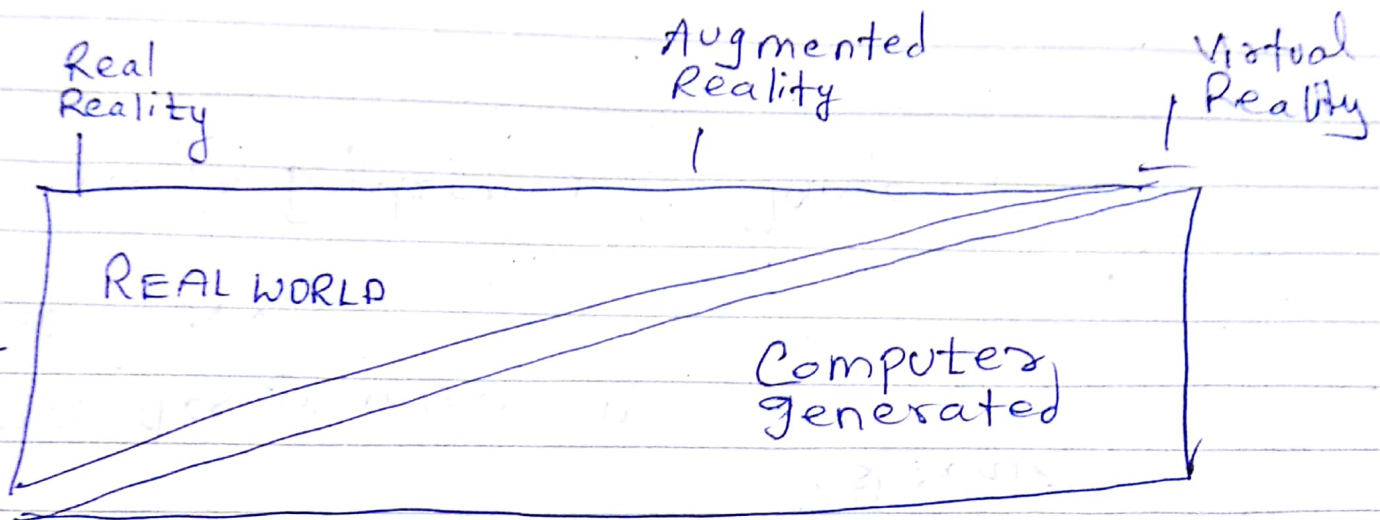
UNITY → 3 Components

- ① Position
- ② Rotation
- ③ Scale.

3D design model in

Real Env.

Google Daydream, & Tango



Immersive Computing Spectrum

→ Building blocks

↳ Tango, Web VR, Jump VR, Video Capture

↳ 3D sense of motion-sensing capabilities

↳ Interact with digital content in physical way

↳ Easy glimpse