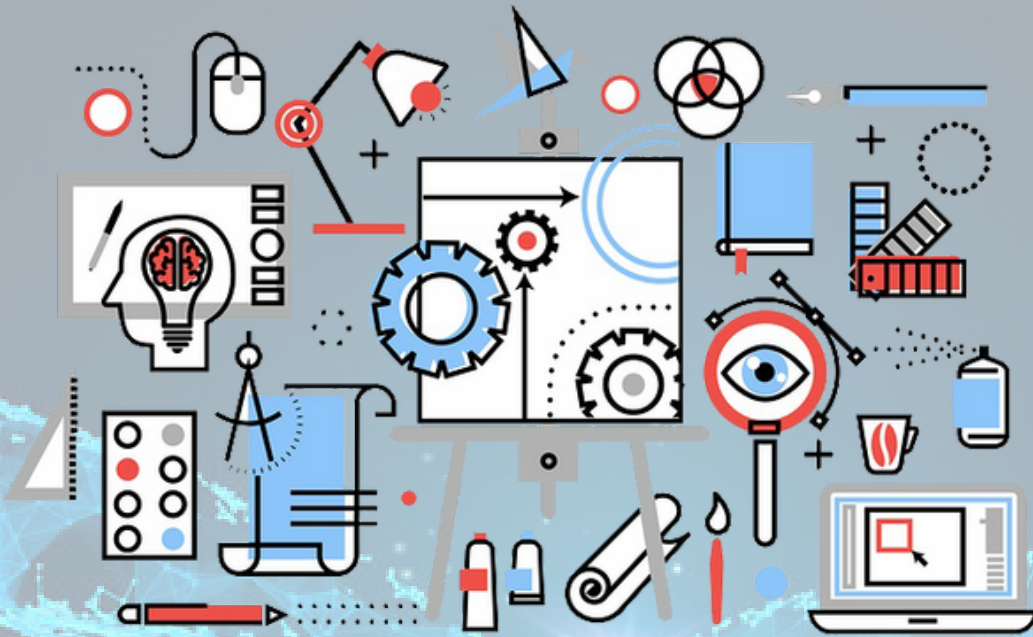




# XRIG - IITM



## VR TUTORIAL#3

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VR, short for virtual reality, allows people to be fully immersed in a fabricated environment. This is usually (but not always) delivered through head-mounted hardware that tracks a person's movements. These VR headsets consist of a screen (or two display panels, one for each eye) housed in a frame (or headset) strapped or fitted to your head.

## Degrees of Freedom

In VR, DoF (Degrees of Freedom) refers to how well the system can track your movements. It's like the VR system's ability to understand and mimic how you move in the real world.

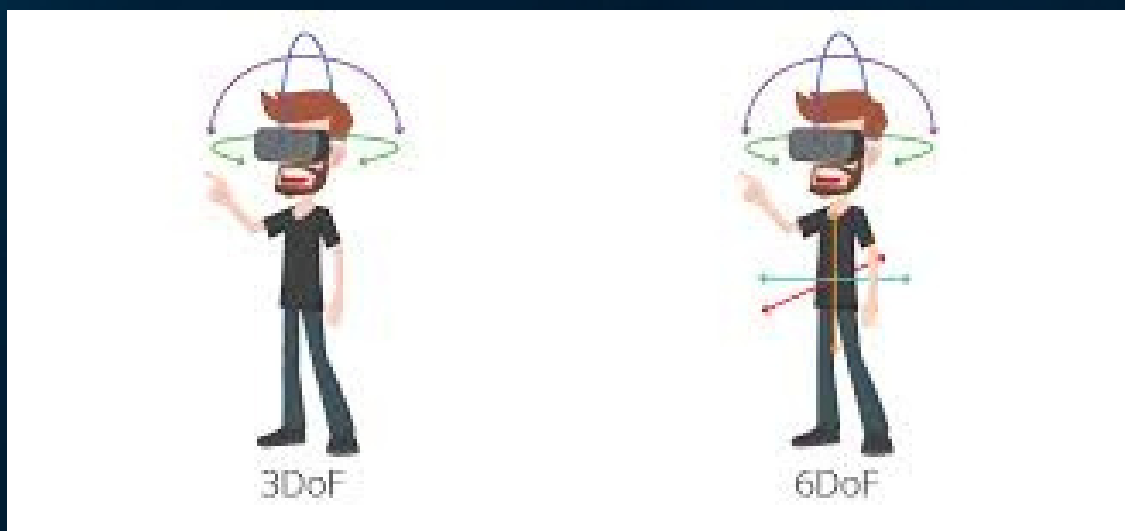
There are three main types of DoF in VR:

1. Positional DoF: This means the VR system can track where you are in a 3D space. It knows if you move forward, backward, up, or down.
2. Rotational DoF: This refers to the VR system tracking how you turn your head or body. It knows when you look left, right, up, or down.
3. Translational DoF: This is about the VR system tracking your movements in addition to rotations. It can tell if you walk, run, or lean from side to side

Some VR systems offer 3 DoF, which means they can track your rotational movements. This allows you to look around in the virtual world.

More advanced systems have 6 DoF, which means they can track both your positional and rotational movements. With 6 DoF, you can move and interact more naturally in the virtual environment.

Higher DoF in VR gives you a more realistic and immersive experience. It feels like you're there because the system can track your movements more accurately. You can explore and interact with the virtual world in a more natural and lifelike way.



### 3 DoF vs 6 DoF

1.3 DoF: Imagine you have a VR headset on your head, and you can look around in the virtual world. With 3 DoF, the system can track the rotation of your head. So, when you turn your head left or right, look up or down, the virtual world changes accordingly. However, it doesn't know if you move your head forward, backward, or lean to the sides. It only tracks the rotational movement, not the position or translation.

2.6 DoF: Now, imagine a more advanced VR system. With 6 DoF, it can do everything that a 3 DoF system can do, plus more. In addition to tracking the rotation of your head, it can also track your position and movement in the virtual world. It knows if you walk forward or backward, move up or down, and even tilt or lean from side to side. This makes the virtual experience feel more realistic and immersive because you can freely explore and interact with the virtual environment, just like you would in the real world.