# Augmented Reality & Virtual Reality


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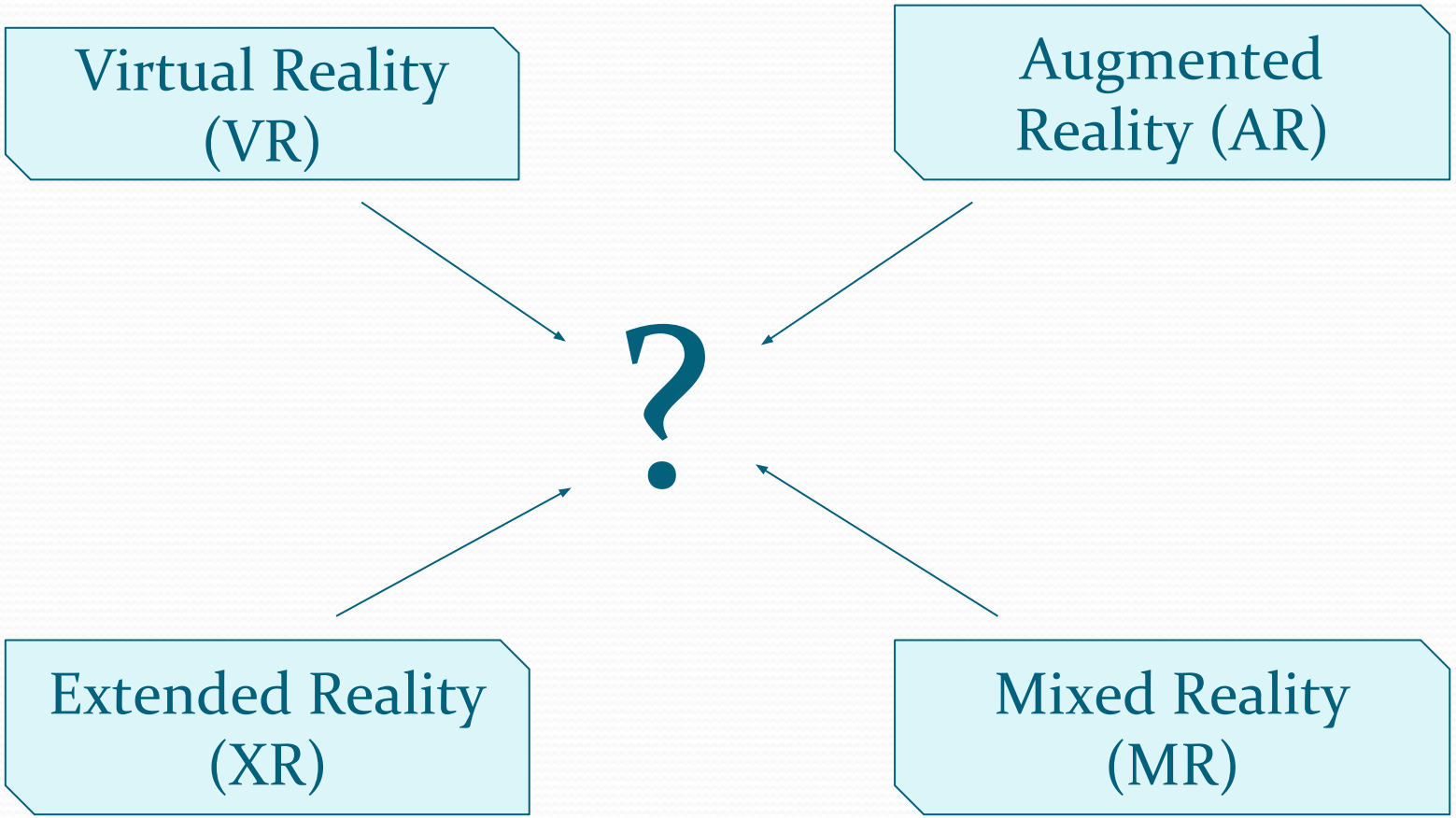
# It's time we discover all the R's



# Virtual Reality (VR)

- Computer-simulated reality
- Artificial environment that physically does not exist
- Users with VR are closed off from the real world
- Typically consists of headset & some sort of controller
- Types of VR devices:
  - Oculus Rift
  - HTC Vive
  - Samsung Gear VR
  - Google Cardboard

# Augmented Reality (AR)

- A way of viewing the real world in which your view of the real world is augmented by a computer-generated input
- These inputs can be still images, audio or video
- AR *augments* (adds to) a real-world scene, instead of creating something from scratch
- Types of AR devices:
  - HUDs (Heads-Up Displays)
  - Holographic Displays
  - Smart Glasses
  - Handheld/ Smartphone based

# Sample Video - VR & AR

Sample Virtual Reality:
https://www.youtube.com/watch?v=I9BuE61MrF4

Sample Augmented Reality:
https://www.youtube.com/watch?v=0jeGahhWn1k

# Mixed Reality (MR)

- View of the real world and integrate computer-generated content that can interact with that view of real world
- Fully digital environment & connect it to real-world objects
- Different instances of MR:
  - AR-based MR
  - VR-based MR
    - Often referred to as *Augmented virtuality*
- Both MR instances explained in next page

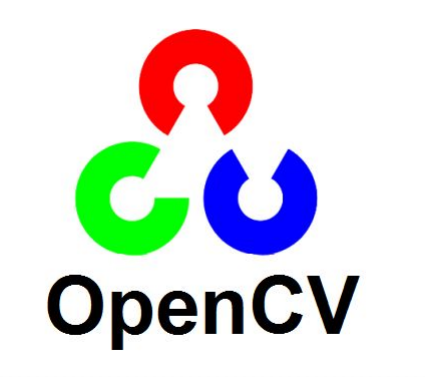
# Mixed Reality (MR) ...contd

- **AR-based MR**
  - In this type of MR, you may have a view of the real-world and a digital basketball may appear to bounce off the real world floor and walls, or a digital ship may appear to land on your coffee table. (so unreal right..😊)
- **VR-based MR**
  - In this type of MR, you may only see a fully digital environment with no view of the real-world, but that digital environment is connected to real-world objects around you. Let's say, in your virtual world, real-world tables/ chairs may digitally appear as rocks/ trees & real-world office walls may appear as moss-covered cave walls. (if that makes any sense to you..😑)

# Sample Video - MR

Sample Mixed Reality:
https://www.youtube.com/watch?v=hPLKL_B1gGA

# Technologies used…









# Requirements for a VR system

- Android users need computer running **Mac OS X (10.8+)** or **Windows (7, 8, or 10)** to deploy their VR apps
- iPhone users (iPhone 5 or later) will need a **Mac running Mac OS X (10.8+)** to deploy their VR apps
- VR-ready PC (Intel i5 or greater, high-end graphics card)
- Mobile VR Headset

# Our Client

- Founded in 2015 and is based in Toronto, Canada.
- Our client develops *end-to-end mobile VR* system hardware and software to create, visualize, and collaborate in *immersive environment* for audience worldwide.
- Company's headset allows users to interact with *virtual content* using two *small controllers* that connect with the *phone's camera*.
- Its product comes with a *printable controller* that allows users to interact with their *Google Cardboard VR* experience and a *mobile application* that allows users to create their *own virtual reality* experience.

# VR & it's Products

AN iOS/ANDROID CASE

A protective case made of composite materials that allows full access to your phone screen and ports.

VIRTUAL REALITY HEADSET

Pinć is a breakthrough design in VR hardware with a slim form factor that's comfortable to wear.

A MOBILE PLATFORM

Focused on content creation, consumption and commerce utilizing spatial interaction with an immersive virtual environment.

OPTICAL CONTROL SYSTEM

Utilizing patent pending technology and digital rings for your fingers, allows for multi-touch gestures and spatial operating capability.

# Sample Job

**OpenCV Developer**

Role focusing on *real-time pattern position tracking* utilizing *smartphone camera* for *Virtual Reality* applications. Role is focused on optimization & improvement of reliability of current prototype. Challenges include managing pattern tracking reliability in various lighting conditions and object depth tracking.

**Requirements**

- *C#* 2+ Years Experience
- *OpenCV* 2+ Years Experience
- *Mobile Script (SDK)* Optimization Experience
- Good *Unity 3D* experience
- Object Oriented Programming (OOP) education

Q&A...

Thank You!