

## Multimedia Computing

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March 5, 2019

# Lecture Overview

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Virtual Reality  
Applications

## 1 Virtual Reality Applications

# Virtual Reality Applications

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We'll consider the three main components of any VR application, namely:

- ▶ display
- ▶ content
- ▶ interaction

The choice of VR display depends on the application's requirements:

- ▶ CAVE - position and rotation tracking e.g. driving simulation
- ▶ HMD - position and rotation tracking e.g. dodge-ball
- ▶ mobile VR - e.g. 360 video

# VR content

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- ▶ video of the real-world and events, captured using a digital video camera e.g. most common is 360 videos: fast acquisition; photo-realistic; dynamic control of viewpoint limited strictly to rotation; fixed position, same as position of capture; no interaction
- ▶ computer generated imagery (CGI) generated using 3D computer graphics and animation: similar to computer games; production is a slow process however reuse of models and animations speeds it up a bit; fictional content; can be photo-realistic; full dynamic control of viewpoint (position, rotation); interaction possible

# VR interaction

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Interaction depends on the application's requirements → point, select, click, navigate, etc

In most VR applications, it helps to at least include an avatar where the user's body is supposed to be → proprioception

Otherwise, the 'embodiment' illusion is lost

# Example VR applications

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- ▶ Which kind of display would you use?
- ▶ What kind of content would you use?
- ▶ What type of interaction would you support?
  
- ▶ Spectator at a show e.g. an opera event, etc
- ▶ Sports training
- ▶ News agency reporting a breaking story
- ▶ Data visualization e.g. medicine (fMRI scan), geology (soil horizons/layers), etc
- ▶ Training of emergency response personnel e.g. police, doctors, firefighters, etc
- ▶ Physical Rehabilitation and Psychotherapy

# Demo of VR applications

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