

Virtual Environments (COMP0113)

Start Here – 2023/2024

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Overview

- Academics:
 - Aim and objectives for the course
 - Top-level syllabus
- Logistics:
 - The Moodle pages
 - Coursework

Aim and Objectives

- **Aim:**

- To gain an understanding of the core issues required to engineer effective virtual environments

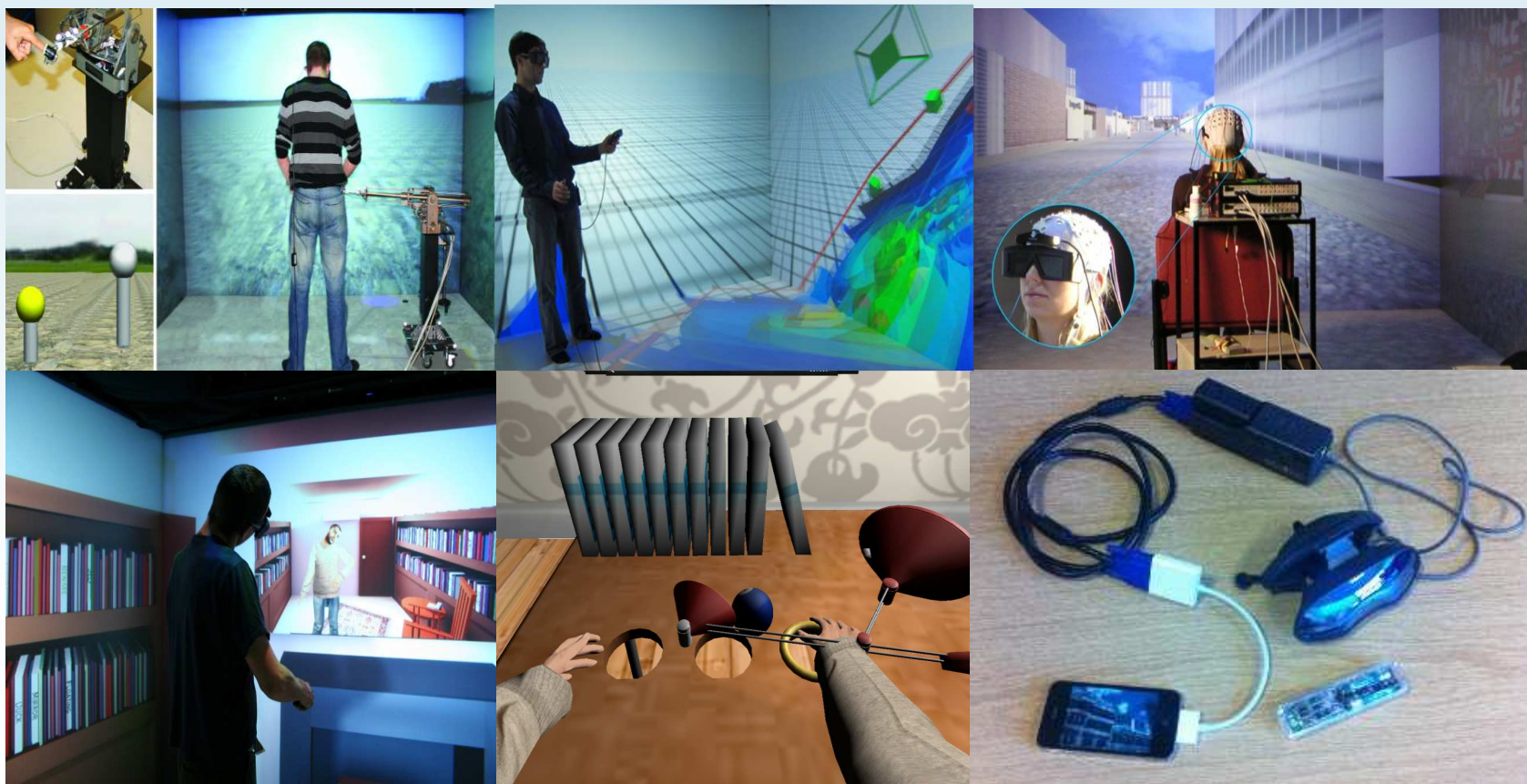
- **Objectives:**

- Understand the concepts of immersion and presence
- Understand the technology required
- Understand the techniques used
- Learn how to make virtual environments
- Build and test a virtual environment system

Top-Level Areas

1. VR/AR/MR Systems
2. Networking
3. Visual Feedback
4. Tracking and Interaction
5. Haptics and Audio
6. Avatars
7. Presence and Place Illusion

What are Virtual Environments?



Week by Week

- See Moodle and Timetable for updates and all links. Rooms are often changed
- Prof Steed's Office hour: Tuesday 10.30-11.30am
 - Team links in Moodle or come to my office, 169 Euston Road, room 4.10

Week by Week (First Half of Term)

- One-hour lecture
 - Monday 10-11am, 66-72 Gower St, G01
- Two-hour lecture
 - Tuesday 3-5pm, 66-72 Gower St, G01
- Lab session
 - Wednesday 12-2pm, Malet Place Engineering Building 1.21, come for EITHER or BOTH hours. Lab sessions are tutorials on Unity and Ubiq.
 - ***Except this week (demo sessions!)***
- Watch videos/read materials as recommended (1 hour roughly, see Moodle each week)

Labs in Week 1 (10th January)

- Visits to the VR research labs in the department (vr.cs.ucl.ac.uk)
- Book **two** slots on Moodle
 - One slot to visit CAVE lab (ground floor of Malet Place Engineering Building)
 - One slot to visit HMD lab (basement of 169 Euston Road)
- To avoid crowding, this week only, the lab is three hours long (12-3pm)
- There will be other opportunities to visit the labs. You can use any of our equipment (within reason!) for your coursework, see later

Week by Week (Second Half of Term)

- One-hour seminar
 - Monday 10-11am, 66-72 Gower St, G01
- Two-hour seminar
 - Tuesday 3-5pm, 66-72 Gower St, G01
- **We will try to finish the seminars in ~3 weeks**
- Lab session
 - Wednesday 12-2pm, Malet Place Engineering Building 1.21, meet with TAs to discuss progress
 - Book your own times to work on your coursework in our research labs.

Module Assessment

- Coursework 100%
 - Group* programming (50%)
 - Group* seminar (20%)
 - Individual research essay (30%)

*These groups need not be the same. Group size will depend on numbers.

CW1: Group Programming

- In groups of 2-4 people, you will develop a collaborative mixed reality space
- Focus is on *training applications* for multiple users
 - Most ideas entertained (instruments, DIY, safety, vehicles, etc.)
 - Can be gamified in some way
 - Do try a variety of published apps to get inspiration
 - Discuss with TAs as soon as possible
- Each group can borrow at least one Meta Quest 1,2 or 3, or Pico 4 device (may even be enough for one each!)
 - Equipment loans will be arranged as soon as CW1 is launched (week 3)

CW1: Group Programming


- Development platforms:
 - Unity (<http://unity3d.com/>)
 - Ubiq (<https://github.com/UCL-VR/ubiq>) A set of tools and resources that the UCL VR team has developed to make construction of shared VEs easy
 - Lots of examples and lots of support from TAs to use it
 - Draw inspiration from the very wide range of existing software that is out there
- In the final week of term we will have a collective demo of all the worlds, with the intention that anyone should be able to try any demo



CW2: Group Seminars

- The seminars are the only presentations in the second half of term
- Groups, length, etc. to be determined based on group size (usually pairs)
- Seminar topics are broad, based on recent research topics
- Group seminar topics lead into the individual essay topics

CW3: Individual Essay

- Research essay
- Each of you gets a *different* essay topic
- Selection to be made in a few weeks time
 - Plenty of different areas depending on your interests
- Marks for research, tying the topic to the lectures and seminars, good synthesis of disparate areas and actually answering the topic in the essay title 

MEQ Feedback 2022-2023

- Students like creativity to CW, access to labs, variety of material
- Students wanted more in-person time
 - Lectures now face to face (more hours this year)
 - Office hours now hybrid (you are welcome to come to my office)
 - Lab practicals are available to you throughout term
 - If needed, we will have a TA face-to-face booking system
- Some comments about coursework marking which is fairly explicit already and we do give quite a lot of feedback.