UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Virtual and Augmented Reality

2223-1-F9201P216

Aims

The aim of this course is to introduce the main concepts of VR and AR, both from the conceptual and applied point of view.
At the end of the course, the students will be able to evaluate the need of a VR/AR solution with respect to the domain and goals of the application to be created, and will be able to design and develop a prototype of an apllication using VR/AR, exploiting state of the art technologies.

Contents

The aim of the course is to introduce the basic concepts of VR and AR from both a theoretical and a practical point of view.
The fundamental principles that characterize VR and AR will be addressed, with basics of design principles and motivations of VR and AR applications.
For both VR and AR, basic enabling technologies will be studied (hints on HW and more in-depth discussion on SW), and examples of simple Unity projects (or other technologies) that use smartphones / headsets as enabling tools will be developed.
Finally, we will see basics of the evaluation (usability, evaluation of adverse effects) of VR / AR applications.

Detailed program

- Introduction to the basic concepts of VR and AR in the "mixed reality continuum" (a line that starts from the real environment, passes through augmented reality and reaches virtual reality);
- Notes on design principles and motivations of VR and AR;
- Intro to VR, basic enabling technologies (basics of HW and more in-depth discussion on SW), examples of

simple Unity projects that use smartphones / headsets as VR tools;
- Intro to AR, basic enabling technologies (basics of HW and more in-depth discussion on SW), examples of simple projects (Unity, or other) that use smartphones as AR tools;
- Notes on evaluation of VR / AR applications (usability, evaluation of adverse effects).

Prerequisites

Basic knowledge of IT and programming

Teaching form

Lectures (28 hours) concerning the theoretical aspects and the introduction to the practical ones, with practical examples.
Exercises in the classroom (or laboratory) (24 hours) for the guided development of practical exercises (in the laboratory or on personal PCs)

Textbook and teaching resource

Slides from the teacher.
Technical book for Unity.
Other sources to be defined.

Semester

Second semester

Assessment method

Written test (carried out in the laboratory on online exam and possibly on pre-installed software) on the topics, technologies and exercises seen in class and exercise, and an optional group project (2-3 people) that allows you to get some additional points on the final grade (one single delivery then held valid for all the exams of the academic year).

Office hours

By appointment

Sustainable Development Goals

REDUCED INEQUALITIES | SUSTAINABLE CITIES AND COMMUNITIES