1 Aim

At the end of the course the students will:

- Understand how 3D computer graphics is used in various industries
- Understand the benefits of using computer generated graphics (e.g. saving money) instead of more traditional forms of graphics (e.g. photos, movies)
- Be able to create simple 3D objects
- Be able to create a simple animation
- Be able to use lightning techniques to create more realistic images
- Know about the four main stages for creating an animation: modelling, texturing, animating and rendering.

2 Lesson Plan

2.1 Presentation: Overview of 3D computer graphics - 20 min

The students will be explained what 3D graphics is and how it is currently used in several industries:

- Computer games
- Animations
- Special effects in movies
- Educational videos (e.g. showing molecular interactions)
- Simulations (e.g. car crash tests)
- Architecture and interior design
- Advertisements
- Virtual Reality

I will give some examples for each category and explain the motivation for using computer generated graphics in each industry (i.e. save money, generate images not otherwise available in the real world). I will then explain about the four main stages of an animation:

- Modelling
- Texturing
- Animating
- Rendering

Finally, I will display some designs I've made in the past, to give the students an idea of what one can do with these skills.

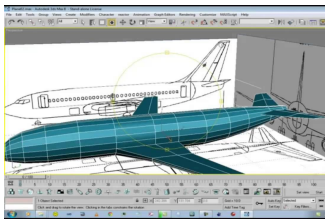
2.2 Practical session - 2h

This will be a hands-on session, where I will show the students how to create some basic 3D objects and put them together in a 3D scene. The students will try to replicate my steps as I'm doing them on their computer, and I will pause if any student is left behind. The session will be highly interactive and I will ask students to suggest simple objects which we can then draw together.

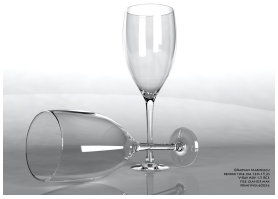
Some of the tasks that we will aim to do:

- Build a house
- Animate the movement of a plane
- Build realistic wine glasses

(a) House



(b) Plane



(c) Realistic wine glasses

Figure 1

2.3 Student-led session - 1h

The students will be grouped into teams and each team will be free to draw anything they like. At the end of the session, the teams will display their 3D images/animations in front of everyone else. Everyone will vote for the best 3D object/animation (self voting not permitted) and the winner team will be awarded a prize.

3 Teaching experience

I have organised a 3-week course on this topic in 2013 at Imperial College (IC) London. I have also been a tutor for several programming and modelling courses:

- Programming in Java/C++: Taught this for 1.5 years to first-year undergraduate students at IC
- Computational Modelling in Medical Imaging: Taught this for

Personal portofolio

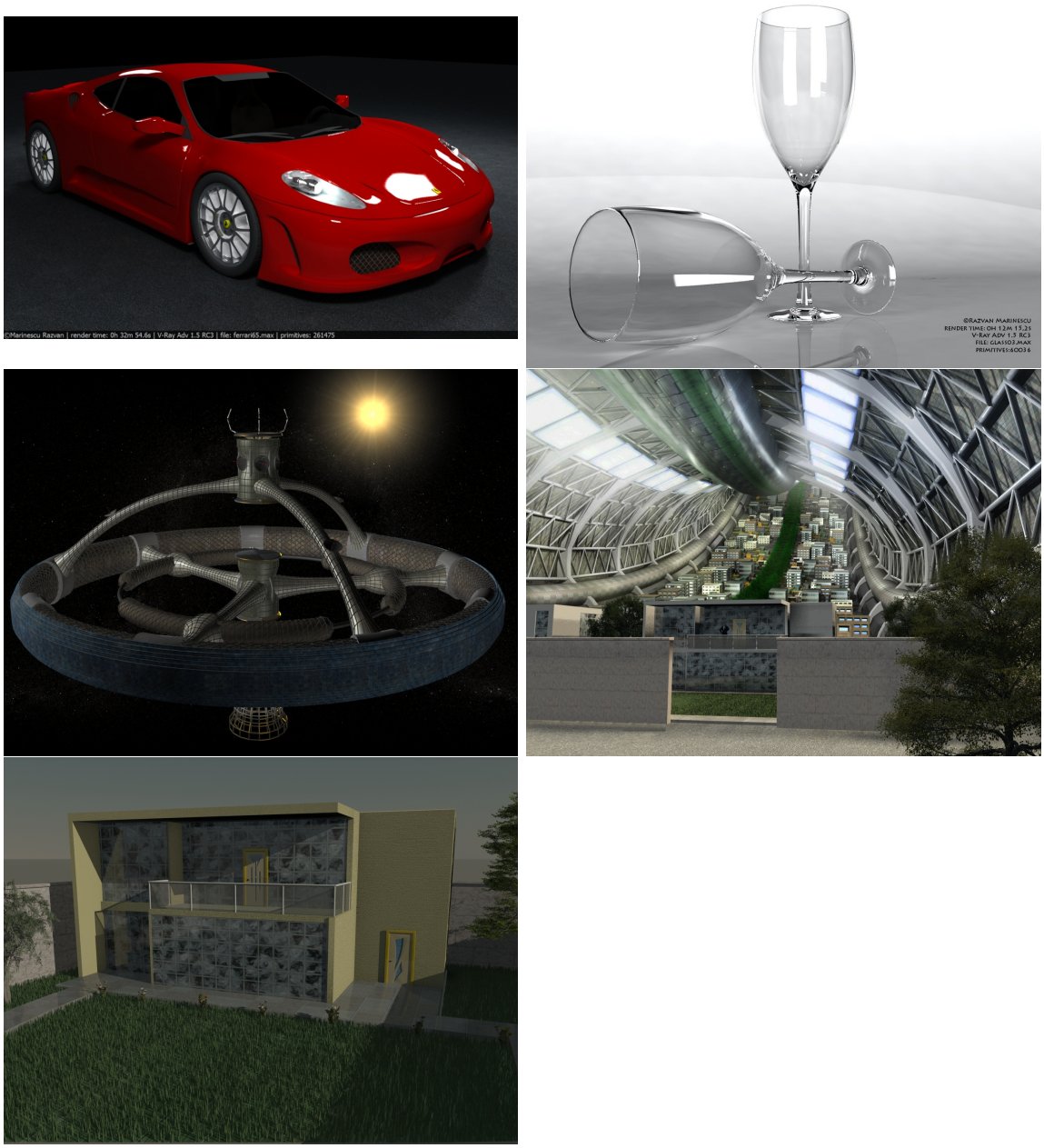


Figure 2: Collage of 3D computer-generated images that I've done so far.

Availability

I am available anytime apart from Tue 29 Aug and Wed 30 Aug.