

Computer Graphics

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Course www: <https://www.scss.tcd.ie/~ramcdonn/>

Applications

Movies



Zootopia, Disney 2016



The Curious Case of Benjamin Button, 2008



Life of Pi, 2012

Games



Assassin's Creed, Ubisoft, 2015

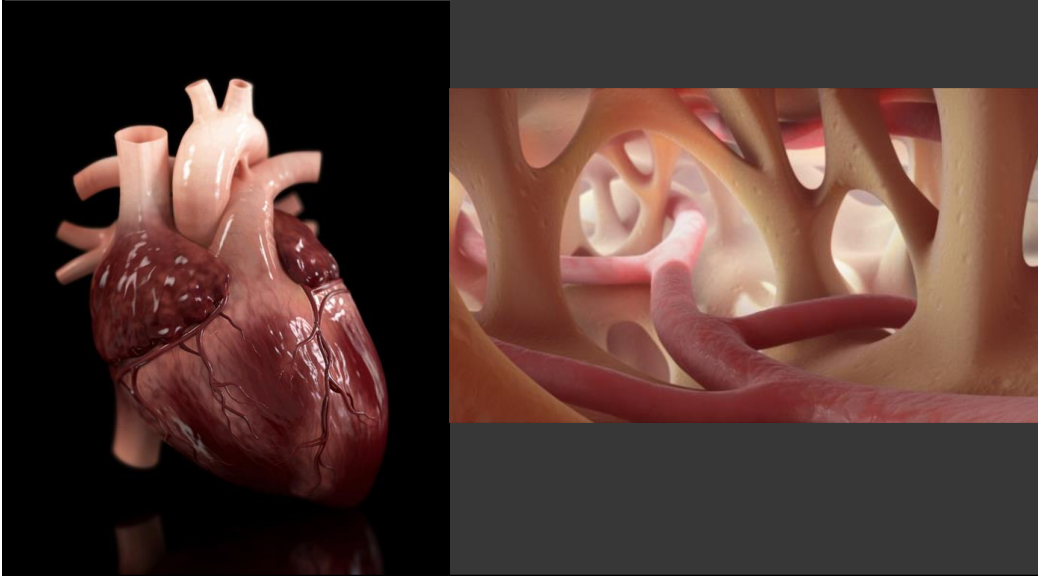
Architectural Design



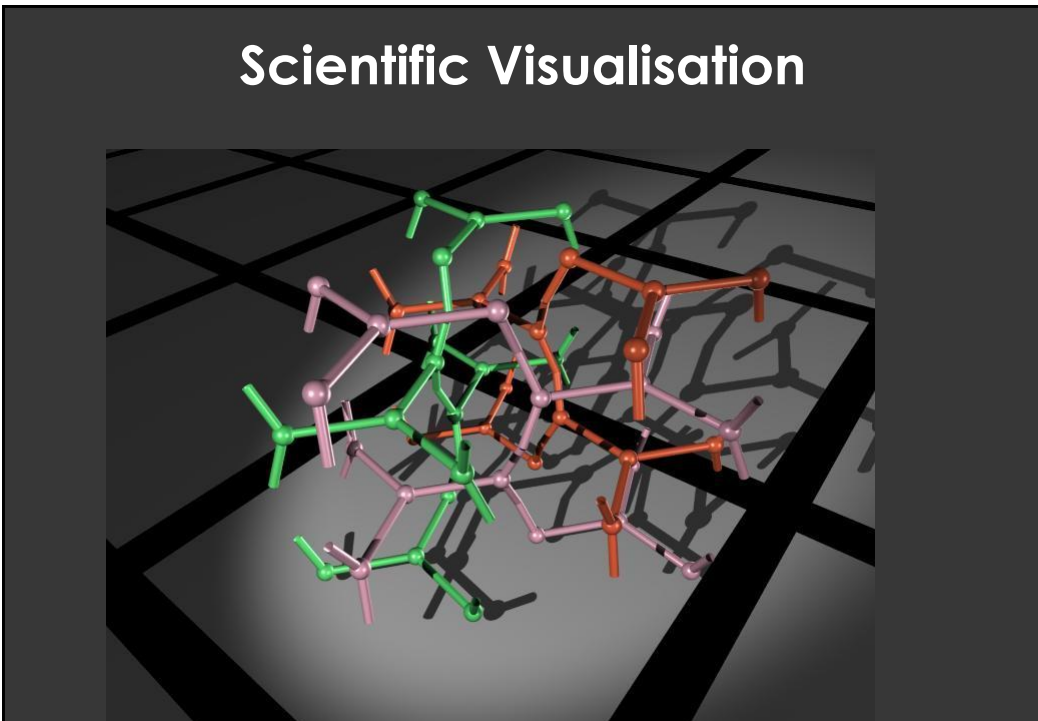
Product Design



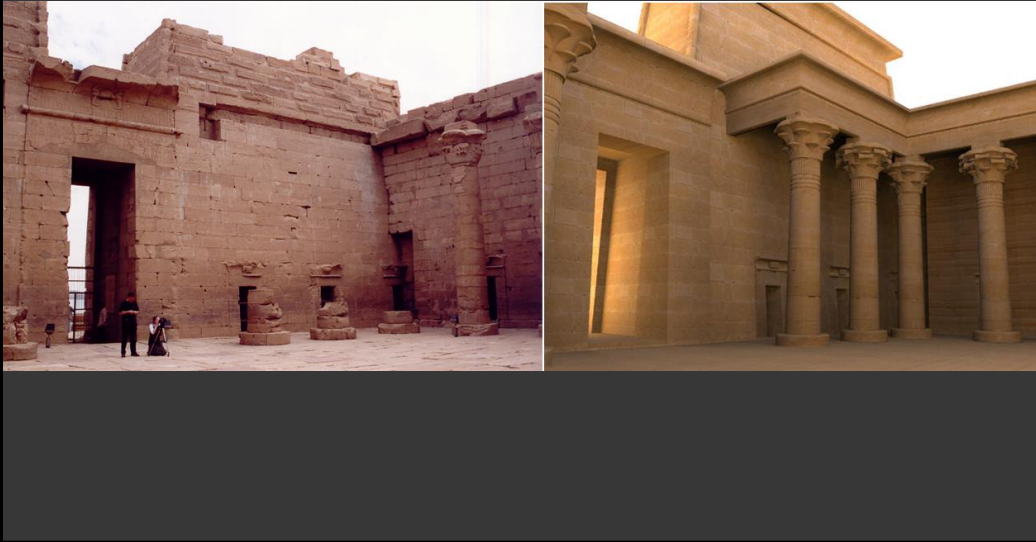
Medicine



Scientific Visualisation



Cultural Heritage

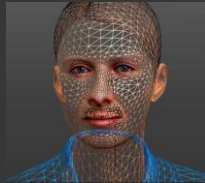


Intro

- BA Computer Science / BAI Engineering / Maths
- CS4052
- 5 ECTS
- Michaelmas wks 1-12
 - Reading week 7-11th November
- Schedule
 - Mon 3-4 Lecture 1
 - Tues 11-12 Lecture 2
 - Tues 12-1 Lab

Graphics

Modelling



creating, or capturing the representation of objects – most often geometrical

Rendering



creating an image of these objects on a display device

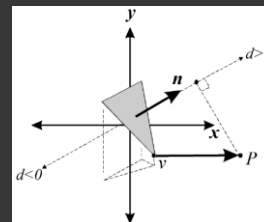
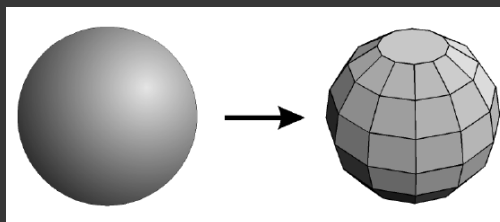
Animation



making objects move by describing how they change over time

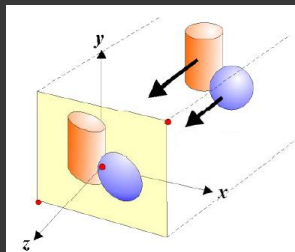
Course Topics

- An introduction to computer graphics; problem domain and applications;
- Modelling - data sources and acquisition; modelling software; representation schemes;
- Linear algebra - two and three dimensional transforms; geometric operations; hierarchical 3D transformations;



Course Topics

- The computer graphics pipeline and the OpenGL API for 3D computer graphics;
- Projection and viewing; window to viewport transformation;
- Illumination models and rendering algorithms; colour, shading algorithms (Gouraud and Phong), local and global illumination;



Assessment

- Project (20%)
 - Will be developed in increments throughout
- Exam (80%)
 - end Semester 1 (CS), end Semester 2 (BAI)