

INF585 - Computer Animation

Damien Rohmer

Damien.Rohmer@polytechnique.edu

2019-2020

Course objectives

Provide general knowledge on 3D Computer Animation in **Computer Graphics** (CG) field

- **Shape deformation**
- **Kinematic animation**
- **Physically-based animation**

Mostly **application oriented** course

- Get use to **CG programming** (C++, OpenGL)
- **Interactive**, real-time, oriented lab class

Knowledge of the main approaches used

- in standard industry (movie production, video games)
- in research

Be able to implement several approaches in interactive CG context.

Provisional schedule

- 7 × **2h class** + **2h TD** (programming)
- 2 last class $\Rightarrow$ 4h **Project**

Topic schedule

Quick warm up - particles system, CG Reminders

Animation in Production

Interpolation

Deformations

Spatial deformation

Surface based deformation

Character animation

Physically based animation

Fundamental models and numerical methods

Cloth animation

Fluids animation

TD (programming exercises) dedicated to each topic.

May convert one class into TD if necessary.

Prerequisites

You are expected to have followed INF443 (Graphique 3D) or equivalent

- 1- Base of CG (surface representation, projection, 3D geometry, mesh structure)
- 2- Basic C++ knowledge
- 3- Basic understanding of OpenGL

If you don't have the pre-requisites

- There will be some short reminders for CG knowledge within the class
- Tutorial you can follow to start: C++, OpenGL (but in your own time)

Note:

- You can survive with very few OpenGL knowledge
- C++ is however crucial for the lab class!

Take care if you are not used to it, it will go fast. (application oriented class)

Grading

Project ($2 \times 4\text{h}$ in class) $\simeq$ 50% grade.

Single or by pair.

Hand out: Your code + video + written report (no oral).

TBD: Final exam or short tests during class ?

Note: Lab classes are training exercises (not graded, solutions can be provided)

You may go to your own speed, organize as you wish

But do not go too much out of schedule.