Introduction to Computer Graphics

Tobias Isenberg

Overview

Computer Graphics is Dead!
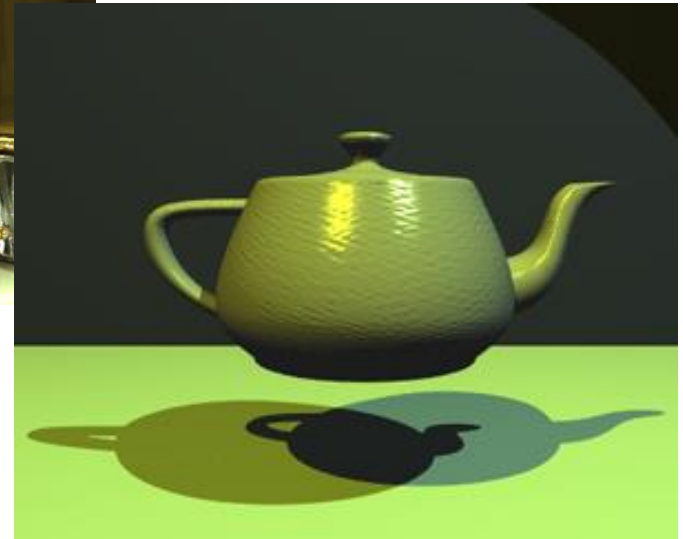

OpenAI

Computer Graphics is Dead!
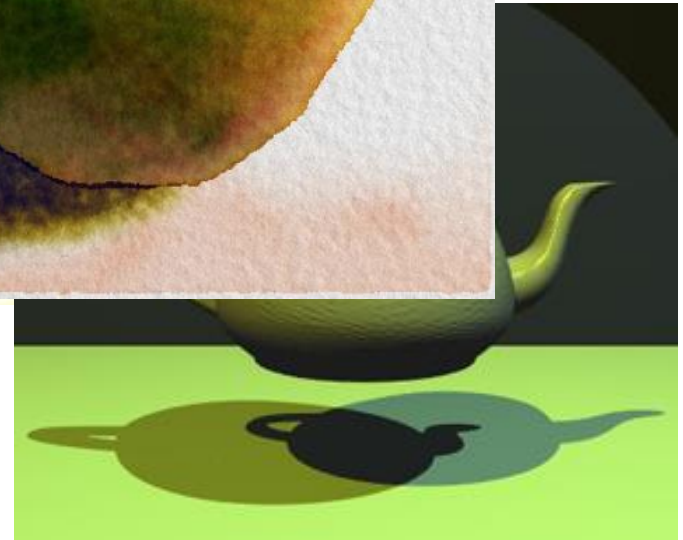

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Computer Graphics is Still Needed!

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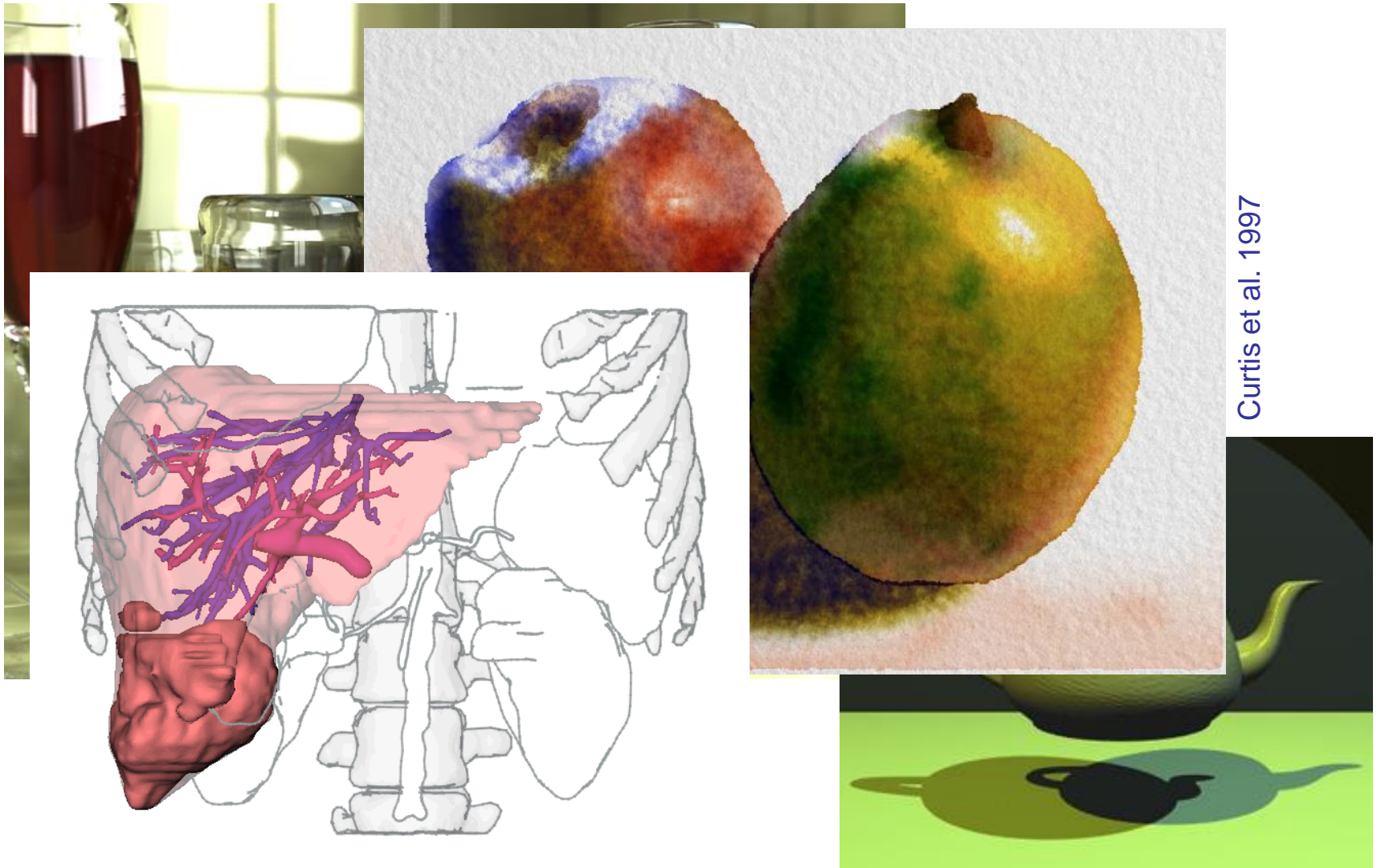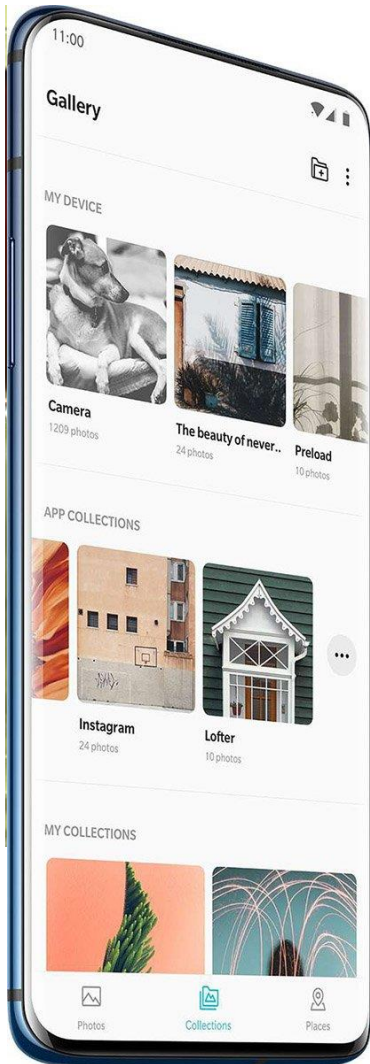# Computer Graphics is Still Needed!

Curtis et al. 1997

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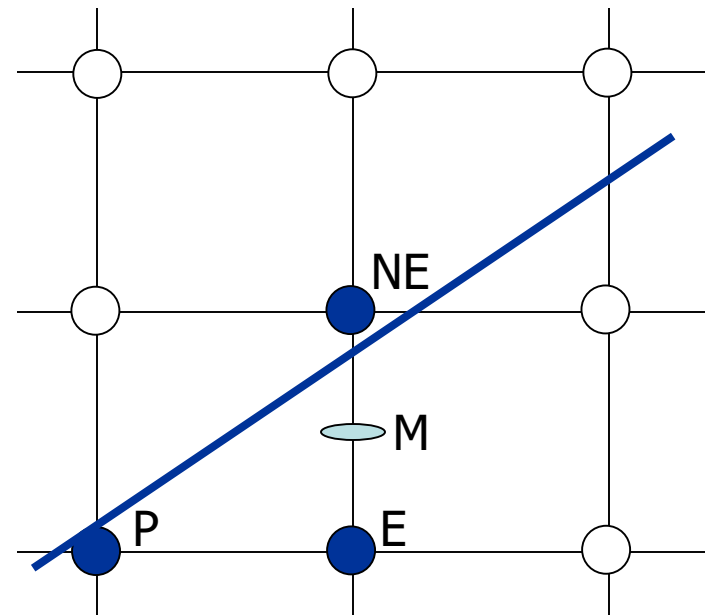# Computer Graphics is Still Needed!

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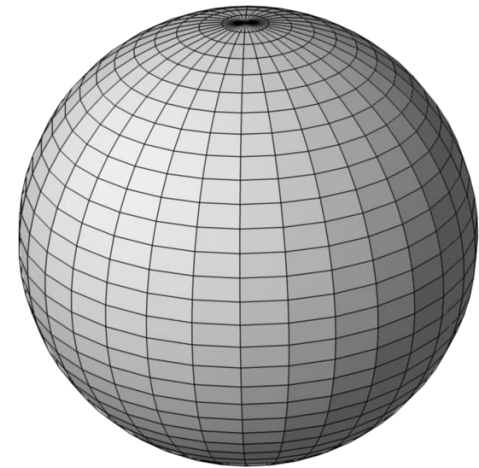
Computer Graphics – Overview

1. introduction,
   scan conversion

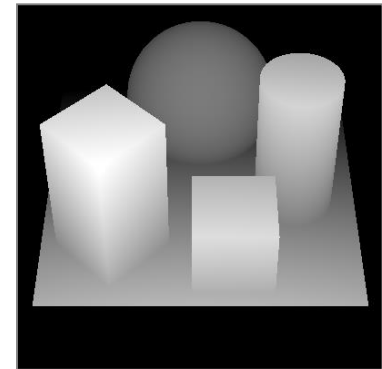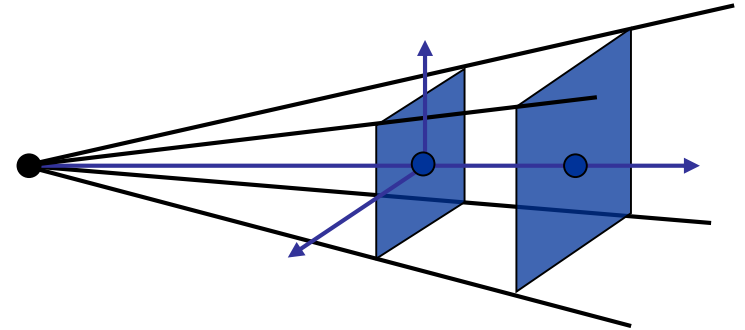# Computer Graphics – Overview

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2. 2D/3D transformations,
   3D object representations

$$\begin{bmatrix} x' \\ y' \\ w' \end{bmatrix} = \begin{bmatrix} a & c & b \\ d & e & f \\ g & h & i \end{bmatrix} \begin{bmatrix} x \\ y \\ w \end{bmatrix}$$
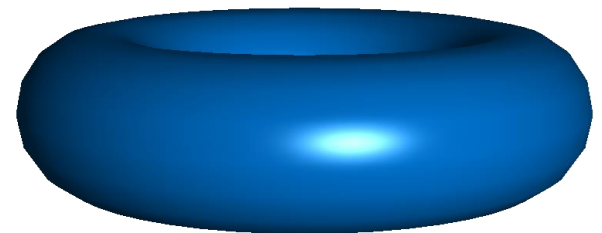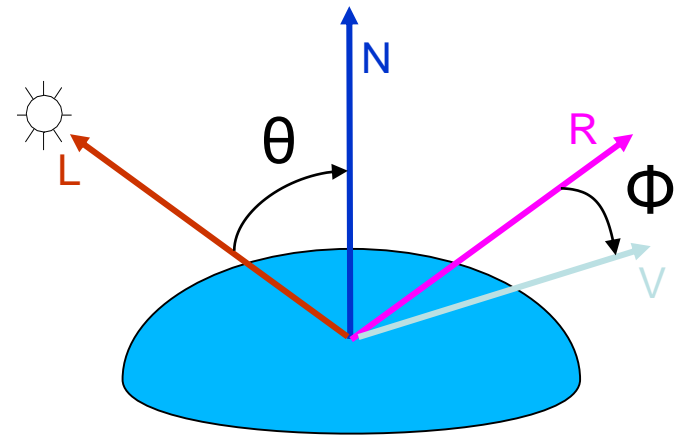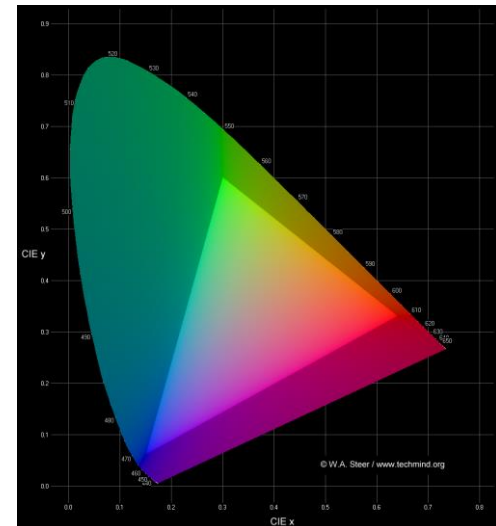
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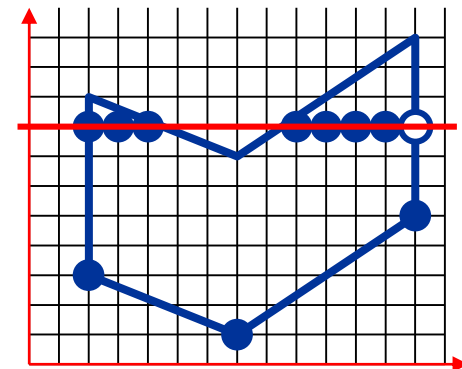
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   color and color models

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4. illumination; shading
5. texture mapping;
   color and color models
6. clipping; filling

1001	0001	0101
1000	0000	0100
1010	0010	0110

Rough plan

- 6 lectures in total:
  - intro, scan conversion
  - 2D/3D transformations
  - object representations, viewing
  - projections, HSR
  - illumination, shading
  - texture mapping
  - color, color models
  - clipping, filling

Computer Graphics – Lectures

- language: English
- materials and information: **http://tobias.isenberg.cc/graphics-intro/**
- textbook: Peter Shirley et al.: Fundamentals of Computer Graphics, 4th ed., 2015, A K Peters, Ltd. ISBN: 978-1-48222-939-4
- suggested readings for covered topics (2nd – 4th ed.)
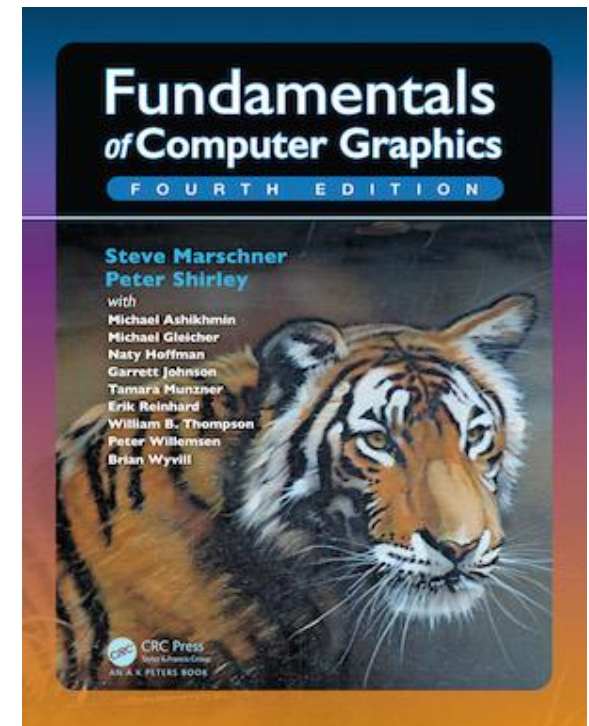
Computer Graphics – TD/TP, Project

- taught by Paritosh Sharma *paritosh.sharma @ universite-paris-saclay.fr*

- taught in English/French

- OpenGL-based graphics programming

- TD1: intro/reminder OOP

- TD2–TD5: small assignments

- TD6: personal project (more time)
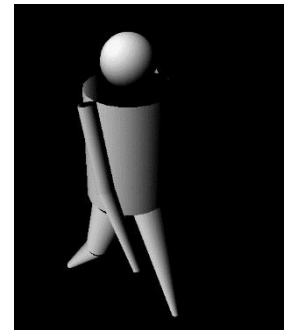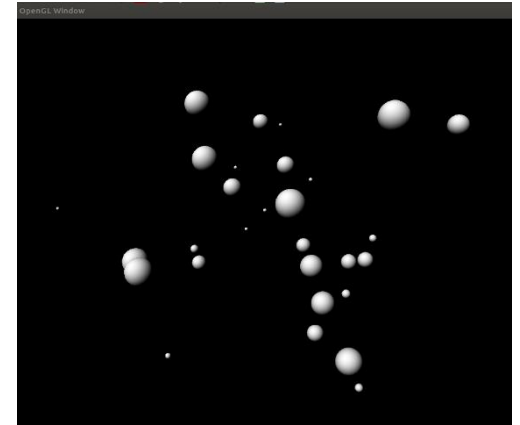
Computer Graphics – TD/TP, Project

- implementations in

- use of 3D graphics API
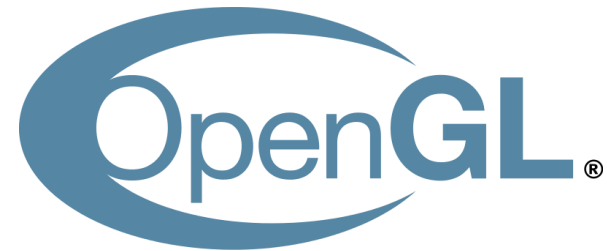
- other exist as well

Computer Graphics – TD/TP, Project

- personal project
  - technological advancement
  - quality programming
  - originality and creativity
  - project adapted to your skills
- examples from previous years
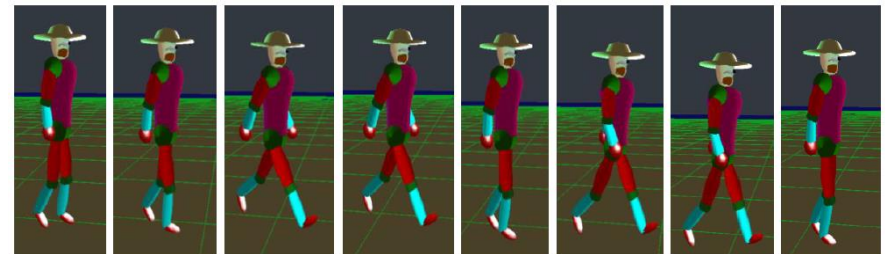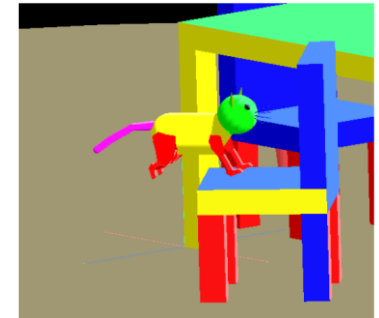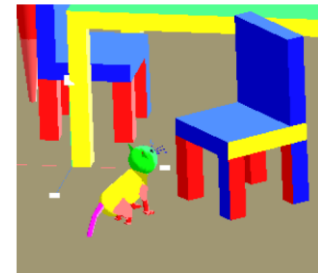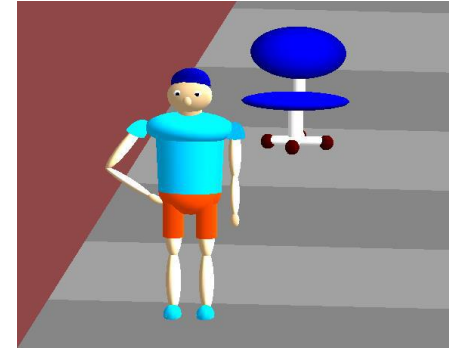
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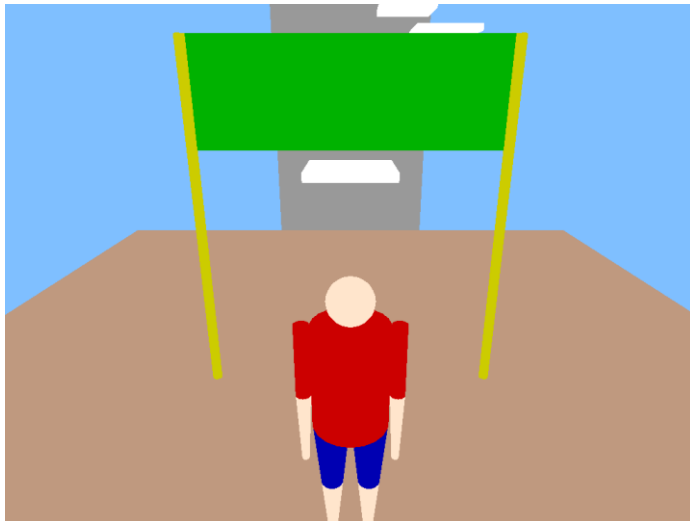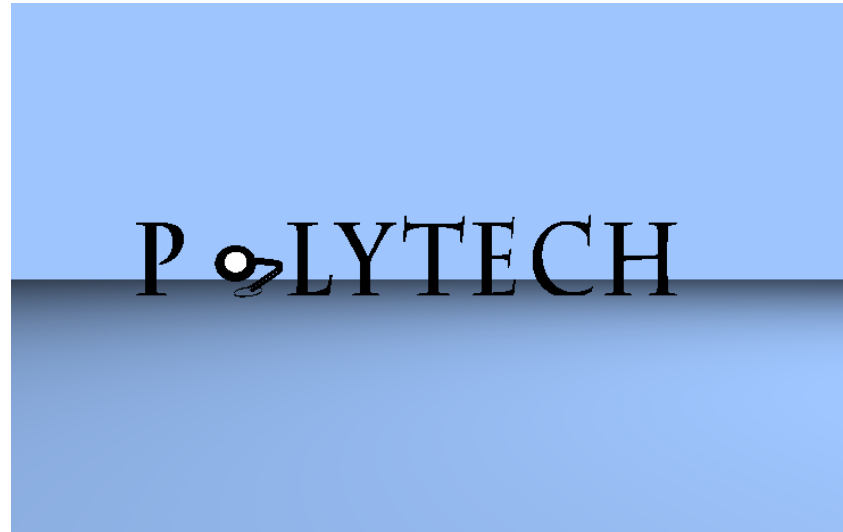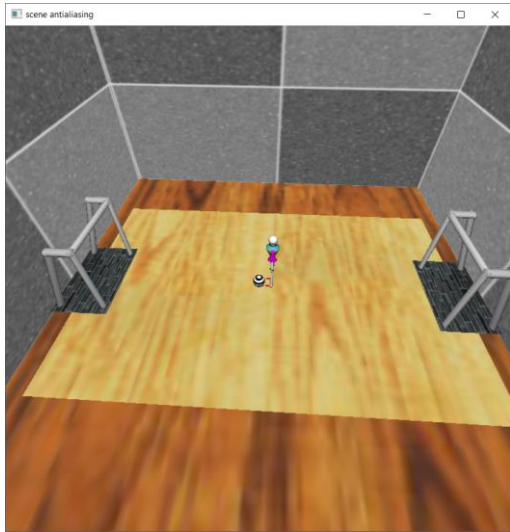
Minecraft clone 2020/21 (1)
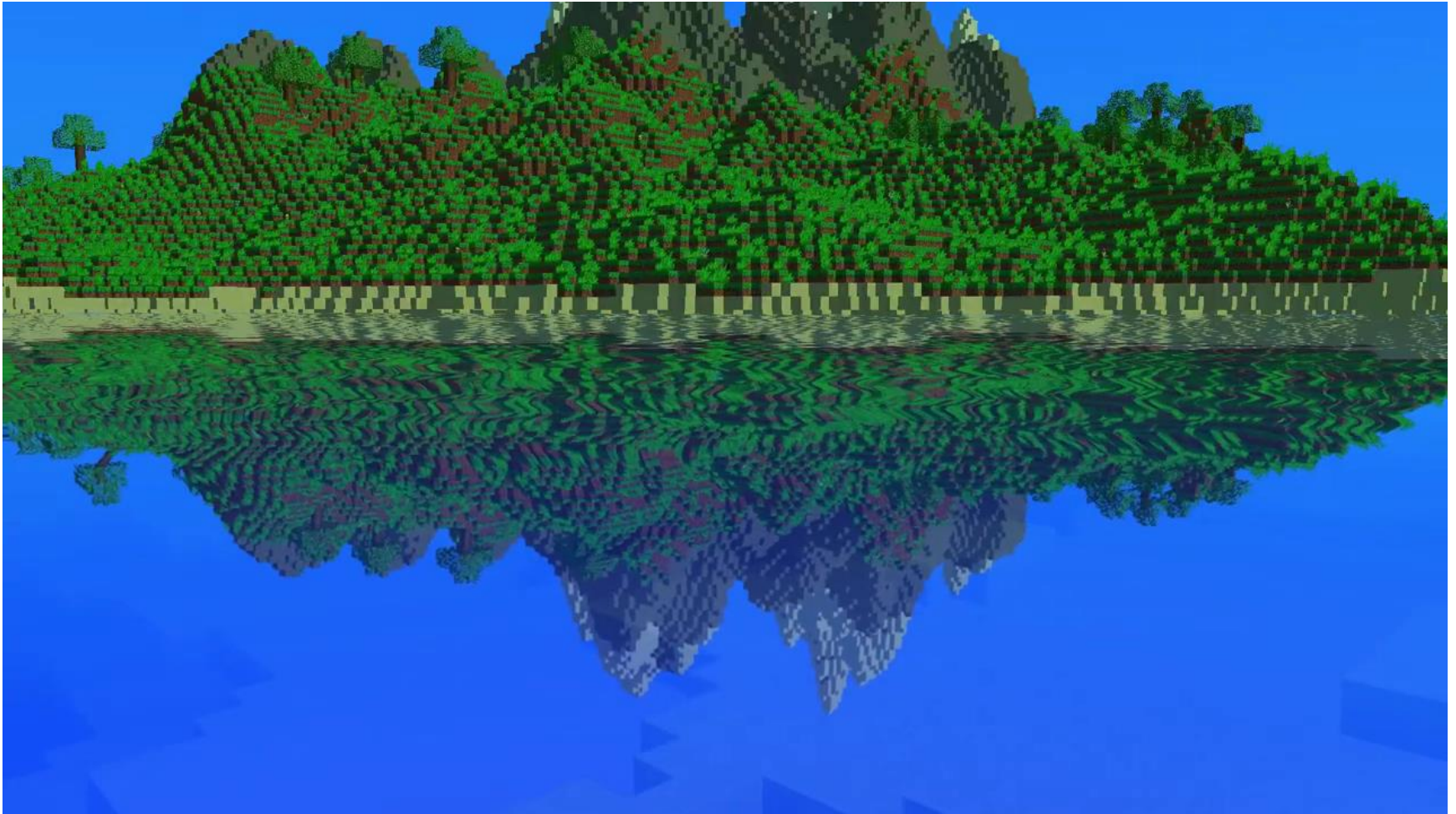
by Angel Uriot, Gaétan Renard, and Arthur Azambre (best student project of 2020/21)

Minecraft clone 2020/21 (2)

by Mathis Brossier, Houssem Mahmoud, and Pierre Surer (best student project of 2020/21)

Advanced Graphics Class in ET5

- implementation of a raytracer
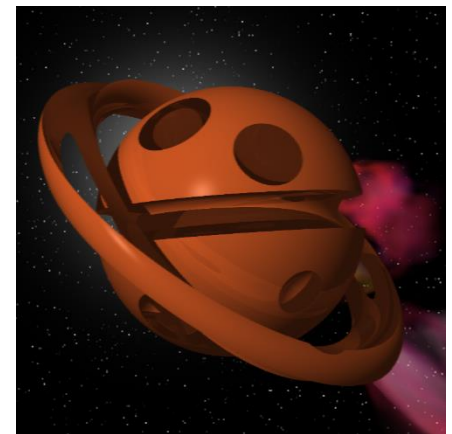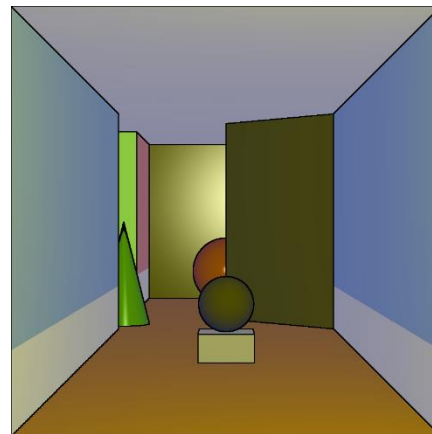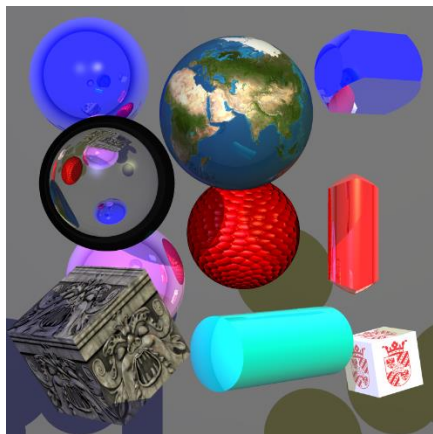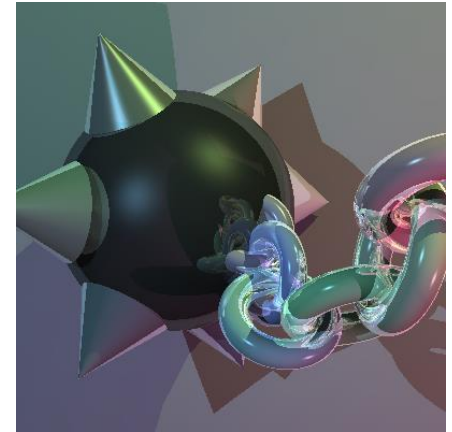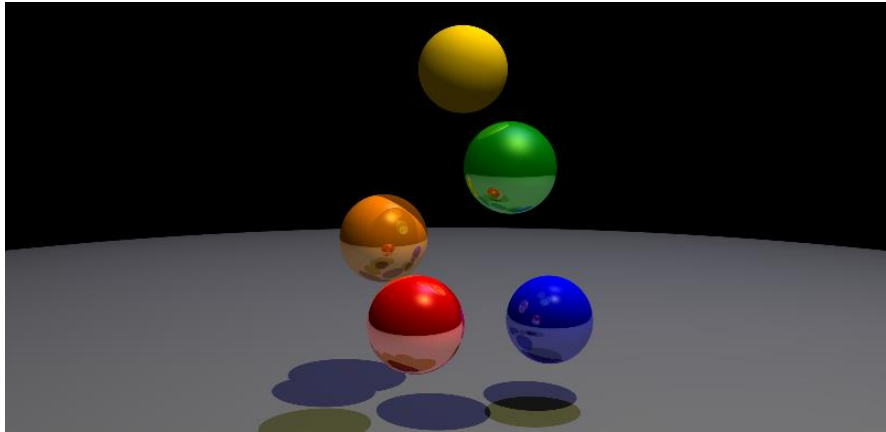
Grand CG Rendering Competition

2024 **Rendering Competition Award**

presented to

in recognition of excellent technical achievements in the class
"Introduction to Computer Graphics"

CG: Grading and Rules

- final exam:
  - in English
  - multiple choice
  - everybody gets personal exam sheet

- cheating: disciplinary actions

- sick during tutorial or exam: call/e-mail me beforehand

Internships @ *Inria* — informatics mathematics

http://www.aviz.fr/
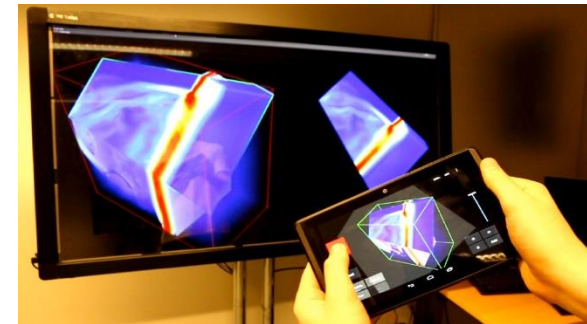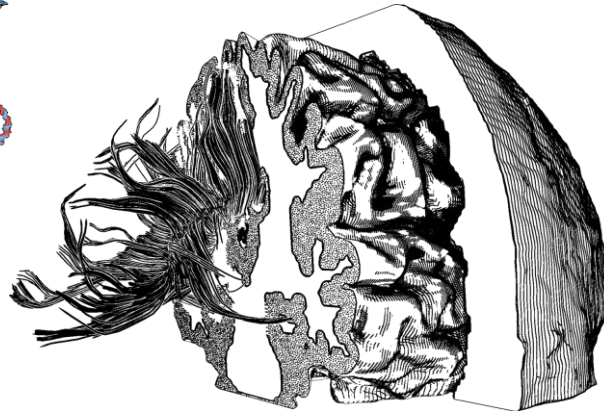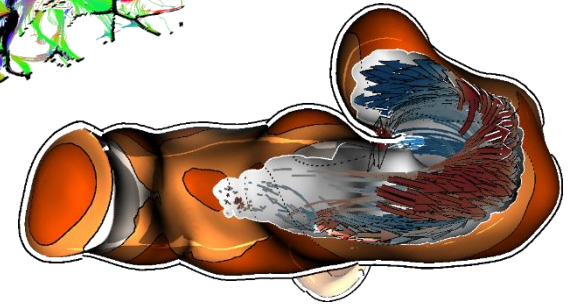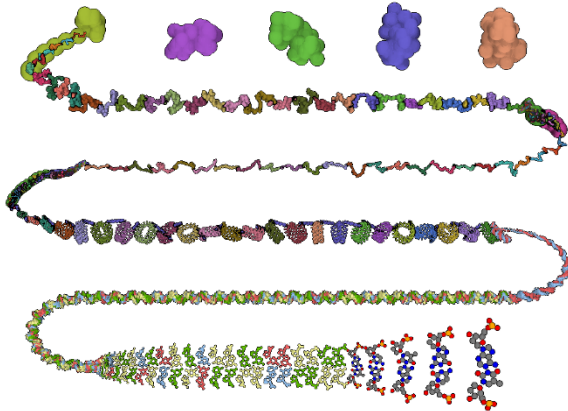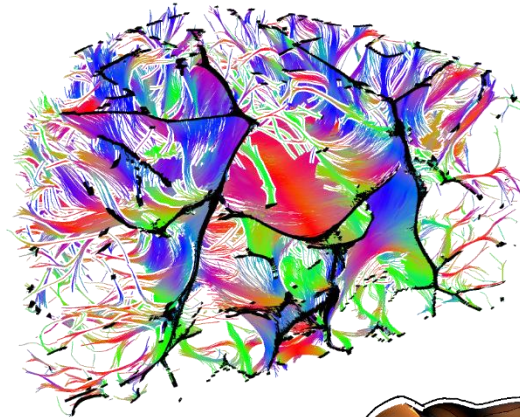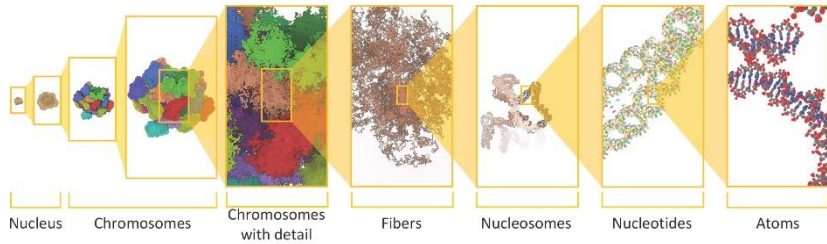
Internships …

- 2 internships
  - in ET4 (abroad?)
  - in ET5: final project, Master's thesis
- possible in research context, but not both possible in academic lab
- preparation for PhD work
- for both internships: ideal if you have something to show for
  $\rightarrow$ e.g., excellent project in CG

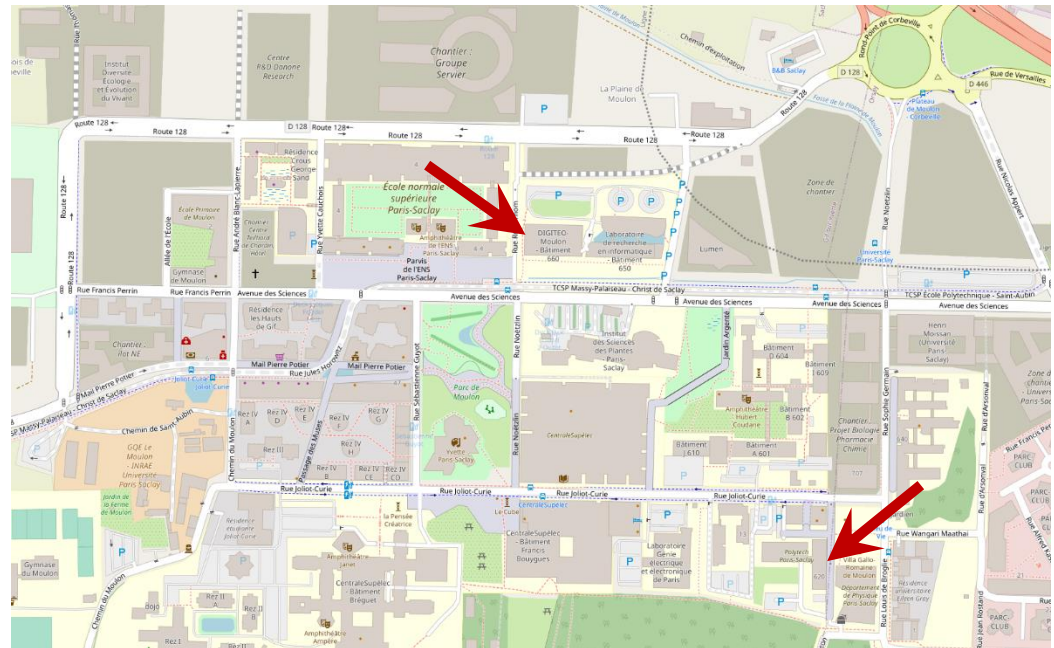# How to contact me

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  01-69156433

Further Rule

exceptions only for those who need the laptop for note taking

Computer Graphics

- Questions?

- if I speak too fast or you do not understand something, please ask (also in French)