

Numerical Methods for Computer Graphics in Java

Academic Year 2025 – 2026

Università degli Studi di Roma “Tor Vergata”

Programmazione in Java e Gestione della Grafica

Academic Year 2025 – 2026

Università degli Studi di Roma “Tor Vergata”

Presentation of the Course(s)

- **Lecturer**

- Hendrik Speleers
- speleers@mat.uniroma2.it

- **When**

- First semester
- Monday 14:00 – 17:00
- Wednesday 14:00 – 18:00

- **Where**

- Aula 20 or PC Lab 25

PJGG

- Dora Giammarresi
Time TBA
- Jacopo Zuliani
Second semester



Presentation of the Course(s)

- **Topics**

- Shared Part 1: Object-oriented programming in Java
 - Java syntax + object-oriented paradigm
 - Development and reasoning about algorithms/programs
- NMCGJ Part 2: Basic principles of computer graphics
 - Basic 2D graphical techniques in Java (2D drawing, image manipulation, ...)
 - General 3D graphical techniques (rendering pipeline, raytracing, ...)
- PJGG Part 2: Graphic management in Java
 - Advanced 2D graphical techniques (graphical user interfaces, ...)

Presentation of the Course(s)

- **Related courses in LM**
 - CAN1: Modellizzazione Geometrica e Simulazione Numerica
 - Computer aided geometric design (Bézier and spline curves/surfaces)
 - Metodi e Modelli in Computer Graphics
 - Advanced raytracing and radiosity
- **Related courses in STM**
 - Too many to enumerate...



Presentation of the Course(s)

- **Application fields of the course**

- Software industry
- Game industry
- Movie industry
- Computer aided manufacturing
- ...

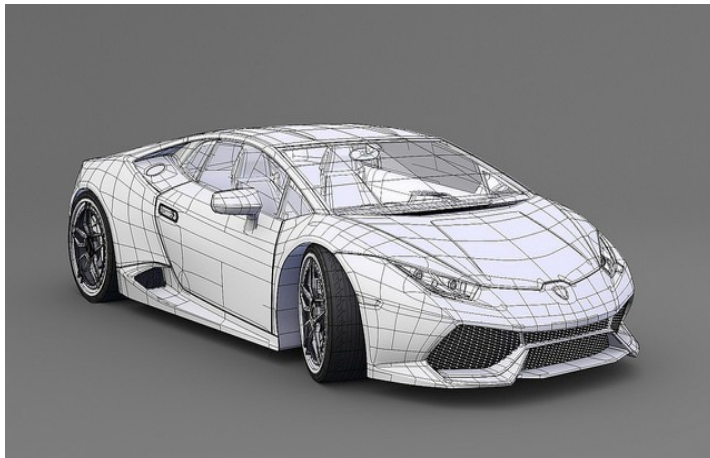
How to develop software?

+How to create 2D/3D models?

+How to visualize models?

Presentation of the Course(s)

- Application fields of the course



Lamborghini Huracán



Tomb Raider: Lara Croft Character Evolution

Ratatouille
characters
© Pixar



Presentation of the Course(s)

- **Application fields of the course**

- Software industry
- Game industry
- Movie industry
- Computer aided manufacturing
- ...

How to develop software?

+How to create 2D/3D models?

+How to visualize 3D models?

- **Goal of course**

- Understanding of the basic underlying principles

Presentation of the Course(s)

- **Application fields of the course**

- Software industry
- Game industry
- Movie industry
- Computer aided manufacturing
- ...

How to develop software?

+How to create 2D/3D models?

+How to visualize 3D models?

- **Examination**

- Project assignment
- Written/oral exam

Presentation of the Course(s)



- **Course material**

- NMCGJ

[https://www.mat.uniroma2.it/](https://www.mat.uniroma2.it/~speleers/teaching/nmcgj/nmcgj.html)

[~speleers/teaching/nmcgj/nmcgj.html](https://www.mat.uniroma2.it/~speleers/teaching/nmcgj/nmcgj.html)

- PJGG

[https://www.mat.uniroma2.it/](https://www.mat.uniroma2.it/~speleers/teaching/nmcgj/pjgg.html)

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