

# A3DM overview

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# **PERSONAL INTRODUCTION**

Welcome to the Department of Computer Science (CS) and to the Universitat Politècnica de Catalunya (UPC). Our web pages include a large diversity of activities in teaching, research, and technology transfer related to Computing. We encourage faculty and students to browse our site and explore the inspiring initiatives carried out in the department in a broad range of multidisciplinary areas.

### UPCOMING EVENTS

There are no upcoming events at this time.

### LATEST NEWS

#### CS NEWS

[Connecta 19: A UPC initiative for the Covid 19 pandemic emergency](#) July 2, 2020

[Telecommuting experiences workshop at RedIRIS](#) April 1, 2020

[Quantifying the non-reported new daily COVID-2019 cases by region in Spain](#) March 30, 2020

[eHealth Eurocampus project awarded "Bonne Practique" by Erasmus+](#) February 4, 2020

[/rdlab 2010-2020](#) December 19, 2019

#### RSS UPC

[Creix un 10 % la demanda d'estudis en primera preferència a la UPC](#) August 6, 2020

### INFORMATION

#### DECLARACIÓ CONSELL DE DEPARTAMENT DE CIÈNCIES DE LA COMPUTACIÓ

En el Consell de Departament celebrat el 9 de Juliol del 2020 s'ha aprovat per consens encarregar a la Junta de Departament redactar aquest escrit, amb l'objectiu de compartir amb els diferents sectors de la comunitat universitària unes reflexions que són àmpliament compartides pels membres d'aquest departament.



# www.virvig.eu

Visualització, Realitat Virtual i Interacció Gràfica

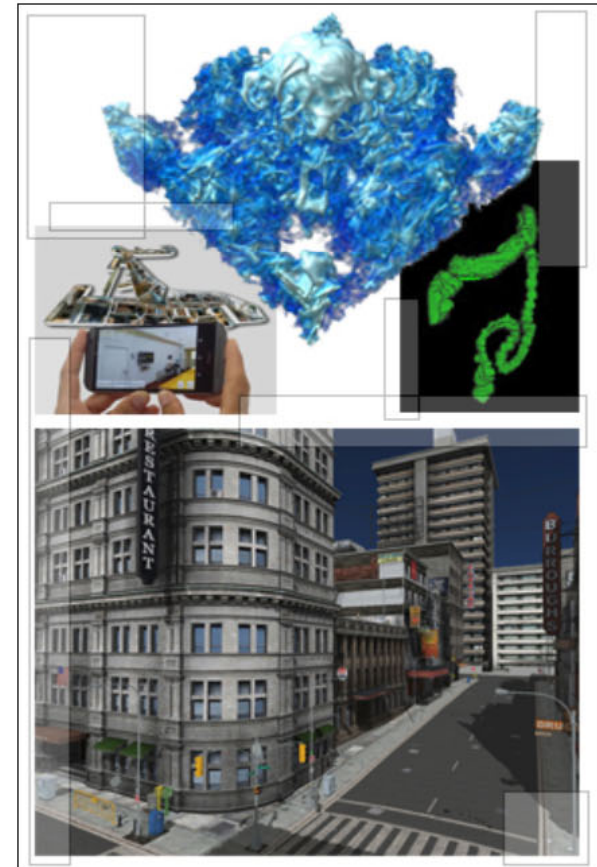
- Home
- People
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- Projects
- Services
- Equipment
- Events
- Software
- Contact

Welcome to the ViRVIG web site, Research Center for Visualization, Virtual Reality and Graphics Interaction. ViRVIG performs research, education and training activities in visualization, geometric and volume modeling, computational geometry, animation, rendering, virtual reality and advanced interaction. ViRVIG was created in 2012 joining the expertise of the two groups working in these fields in the Technical University of Catalonia (UPC) hosted by the Department LSI and the University of Girona (UdG) hosted by the Department IMAE.

ViRVIG is a Joint Research Unit (JRU) of the European Commission with the support of the Spanish Government. ViRVIG is also considered as a reference research group (SGR-1393).

The ViRVIG Research Center main activity is based on the research and technology transfer of results in many fields including:

- Virtual and augmented reality and immersive interaction
- Visualization of complex n-dimensional information
- Geometry processing
- Advanced 3D graphics interaction systems
- Physically-based animation and rendering
- Procedural modeling
- Real-time rendering
- Modeling complex systems



# Resources

- Slides (they will be updated during the course)

<http://www.cs.upc.edu/~virtual/SGI/docs/>

- Further reading (papers):


<https://www.cs.upc.edu/~virtual/SGI/docs/index.php?dir=3.%20Further%20Reading/>


- Some videos (from past courses)


<https://raco.fib.upc.edu>

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**Fitxer**

 1. Theory

 2. Laboratory

 3. Further Reading

 4. Exams

**0 Fitxers - 4 Carpetes**

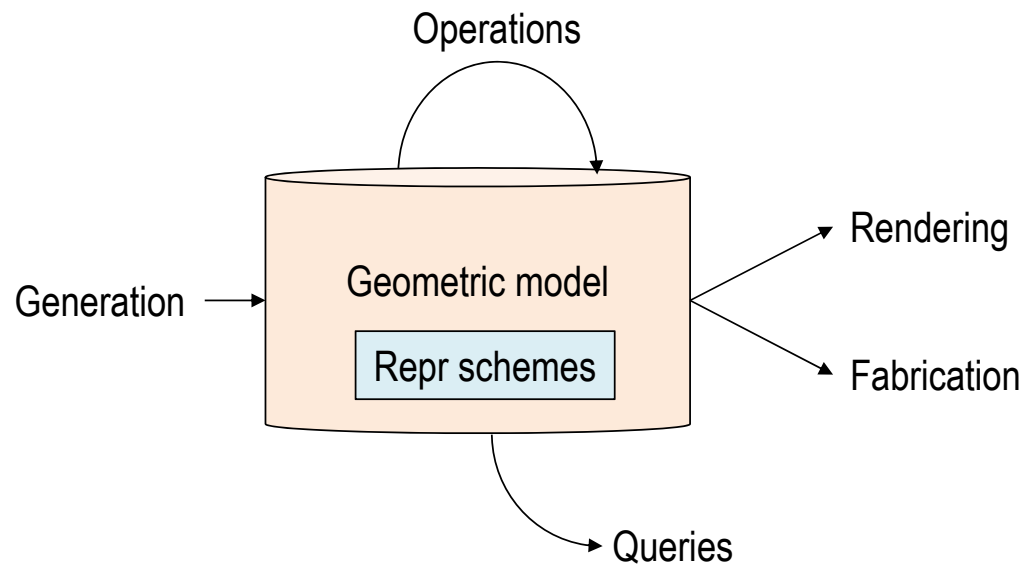
# Faculty

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[andujar@cs.upc.edu](mailto:andujar@cs.upc.edu)



Omega building, office 239

# What is A3DM about?



## Semester 2

Advanced 3D  
Modelling  
(A3DM - 6 ECTS)

Fast Realistic  
Rendering  
(FRR - 6 ECTS)

Scalable Rendering for  
Graphics and Game  
Engines  
(SRGGE - 6 ECTS)

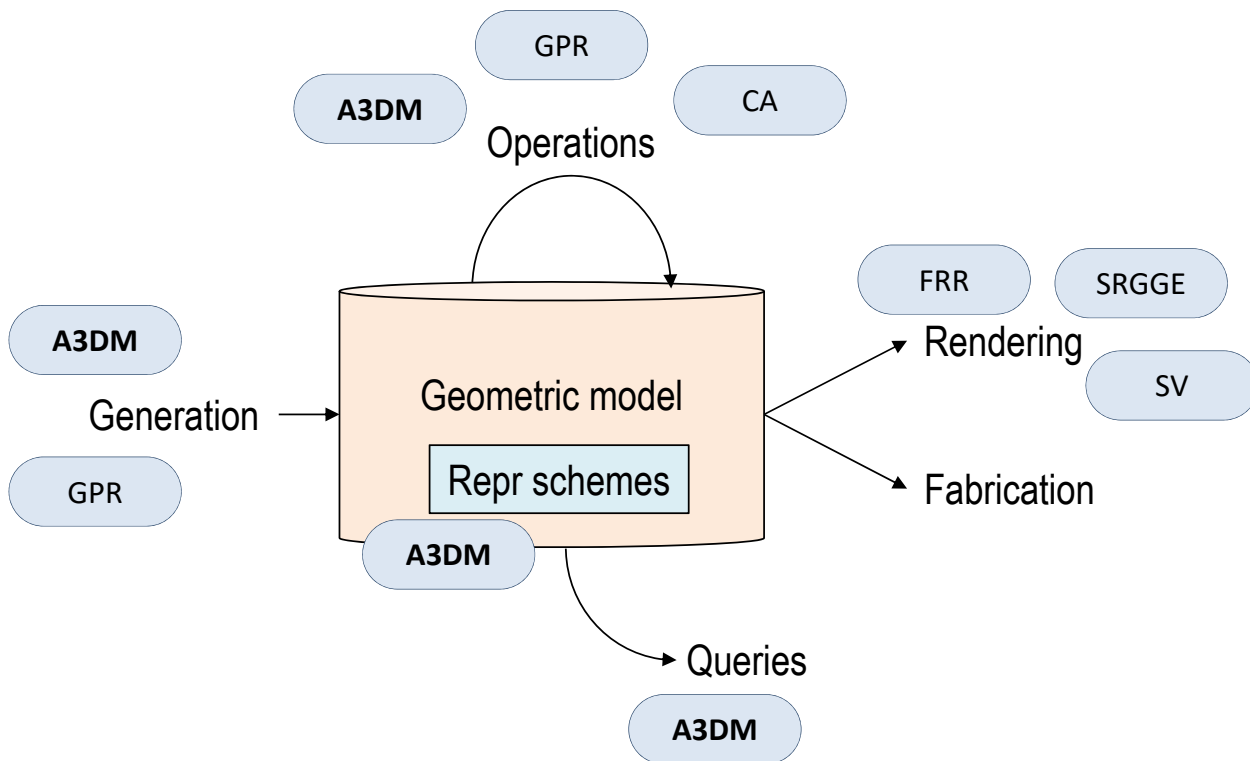
## Semester 3

Computer  
Animation  
(CA - 6 ECTS)

Geometry  
Processing  
(GPR - 6 ECTS)

Scientific  
Visualization  
(SV - 6 ECTS)

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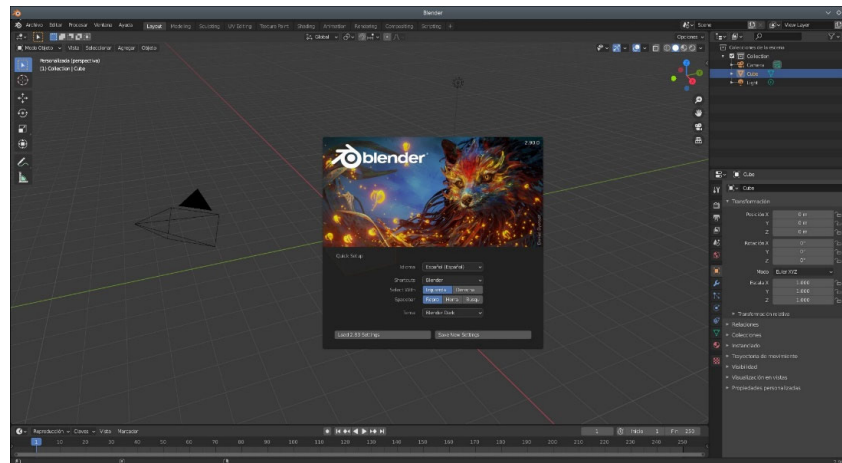
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# Syllabus

- 1. Geometric Modeling**
- 2. Models for 3D solids.**
- 3. Boundary representation**
- 4. Boolean Operations on Brep**
- 5. Queries on BRep**
- 6. Parametric curves and surfaces**
- 7. Subdivision surfaces**
- 8. Space decomposition schemes. Octrees**
- 9. Constructive Solid Geometry (CSG)**
- 10. Implicit modeling**
- 11. Procedural modeling**
- 12. Geometry processing pipeline**
- 13. Triangle meshes.**
- 14. Mesh queries**
- 15. Fractals**
- 16. Mesh compression**

# Lab sessions

- Software development (Python, C++)
- Four projects
- **Individual** work, **individual** submissions
- **Do not submit code that is not your own work**



# Important dates

See racó “Welcome to A3DM”