

UJI Study Abroad Program 2022 #5

Course Title: New Imaging Technologies and Industrial Application

Academic Director: Dr. Inmaculada Remolar Quintana, Director of the New Imaging Technologies (INIT) (remolar@uji.es)

Inmaculada Remolar Quintana is a University Professor in the Department of Computer Languages and Systems at the Jaume I University.

She has a doctorate in Computer Science from the Jaume I University of Castellón, she is currently the director of the Institute of New Imaging Technologies (INIT).

She is the coordinator of the Research Group "Interactive Visualization", integrated within the Institute of New Imaging Technologies. Her current lines of research include geometric modeling, interactive visualization, and video game technology. In reference to these issues, she has participated in numerous research projects, she being the PI of two of them, and she has recognized two six-year research. She has also participated in numerous projects with companies, where she has been able to participate in the application of research carried out in the industry.

Her teaching activity has focused mainly on computer science degrees, degrees in Industrial Design and Product Development, and Videogame Design and Development, also teaching in the master of intelligent systems.

She is an active member and belongs to the board of directors of the Spanish Association of Computer Graphics Eurographics S.E

Some of other featured Lecturers: (for the promotional purpose, with his/her short CV)

Carlos Granell: He is professor at Universitat Jaume I of Castellón, Spain. His research interests lie in the multi-disciplinary application of GIS (Science/Systems), spatial analysis & visualization of streams of sensor- and user-generated geographic content, reproducibility research practices, and finding synergies between citizen science projects, education and dissemination of science. In the lab he is a GIScientist; outside of it he tries to be a science communicator.

Ignacio Miralles: He has a PhD in Computer Science, with a profile that tries to connect scientific research with the business environment. For the past 13 years he has worked in multidisciplinary teams that apply ICT to psychological treatments. He has been part of the research team of three funded projects, he has published in eight journals indexed in JCR, has presented in ten national and international conferences and has been part of the scientific committee (and organizer) of the last international congress of the Spanish Association of Clinical Psychology and Psychopathology. His motivation and knowledge are always applied to connect scientific research with the business environment

Raul Montoliu: He is a Doctor in Advanced Computer Systems from the Jaume I University of Castellón in 2008, graduated in Computer Science from the UJI in 1997, he joined the Jaume

I University as a worker in 2000, where he currently works as a Professor with a doctorate in the Department of Engineering and Computer Science of the Jaume I University, and as a researcher at the Institute of New Imaging Technologies in the GIANT group (INIT). His main lines of research are: indoor location systems, study of human behavior through data obtained from sensors, machine learning, social computing, social network analysis, video surveillance systems and sports video analysis. The results of his research work have been published in important journals (with impact index) as well as in relevant conferences, such as: NEUROCOMPUTING, SENSORS, IJGIS, HMS, CVIU, MTAP, IJIS, JMIV, ECCV, ICPR, ICIP , among others.

Sven Casteleyn obtained his Phd in Science (2005, highest honors), and master degree (1999, high honors), in Computer Science from the Vrije Universiteit Brussel (VUB), Belgium. He worked 6 years as a research & teaching assistant, and 5 years as a post-doctoral researcher at the VUB. Next, he held a European Marie Curie IEF fellowship (Universidad Politécnic de Valencia, 2010-2012), and was a professor from November 2012 until October 2013 at the VUB, Belgium. Since October 2013, Sven is a post-doctoral researcher at the Universitat Jaume I, Castellon. His research interests lie within the fields of Web Science, Web Engineering, Semantic Web, Web of Things and Mobile Computing. Sven also taught over 2000 (classroom) hours of computer science courses at bachelor and master level. Teaching topics range from basic programming and database courses, to user interface design, web engineering and technologies, information systems, logics, conceptual modelling, etc.

Cristina Rebollo Santamaría - She has a doctorate in Computer Science from the Jaume I University of Castellón in 2006 and a degree in Computer Science from the University of Deusto in 1988. She joined the Jaume I University in 1997, where she is currently a contracted professor in the Department of Computer Languages and Systems since 2008. He is a member of the research group "Interactive Visualization", integrated in the Institute of New Imaging Technologies. Her research interests include interactive visualization, augmented reality, virtual reality, gaming technology, and serious gaming.

Rubén García Vidal: Rubén García Vidal: Bachelor of Mathematics and Master in Computational Mathematics. He is now enrolled in the Doctorate in Computer Science and is developing his thesis on hidden Markov models related to e-health, active aging and aging well. He is a project manager at the Institute for New Imaging Technologies since 2011.

Objectives of the course:

Learning new imaging technologies and studying their application in an industrial environment.

Specifically:

1. Deepening the application of ICTs in the creation of SmartCities.
2. Expand the knowledge of interactive visualization applied to the industry.
3. Detect the connection between AI techniques with virtual environment systems.
4. Identify potential technological innovation and apply them to the industry.
5. Learn and differentiate social work tools (soft-skills) that facilitate contact with potential clients.

Target Students: Bachelor or master students in IT or digital marketing, that have basic command of computer science. To follow the course normally it is necessary to have basic programming knowledge and it is also advisable to be familiar with the concepts of virtual reality, smart cities, artificial intelligence and the idea of innovation.

Course Duration: 80 hours (4 hours per day/ 5 days a week, including study visits)

Methodology:

- The methodology combines different techniques to ensure that it is a highly applied training. On the one hand there will be short theoretical sessions where key concepts will be introduced and reference materials will be provided, on the other hand there will be short practical exercises, extracted from real industry examples, which will be solved by the students with supervision of the teaching staff.
- Students will be guided to generate demonstrators and prototypes. Visits to reference companies or entities will allow students to connect the training acquired with the industry. Their final project will be presented at the end of the course as a result of their learning.
- Each student will be able to decide their own itinerary, choosing which technologies to put more focus to generate a final project that serves, on the one hand for their deep learning, and on the other hand to generate a small portfolio element that helps to promote their professional career.

Class Modules:

Block 1: Use of Geospatial Technologies in the context of Smart Cities.

Block 2: Interactive Visualization Tools applied to Urban Environment.

Block 3: Digital Content Creation Tools: Virtualizing the City.

Block 4: Artificial Intelligence applied to Virtual Environments.

Block 5: The Internet of Things (IoT) in the field of the Smart Cities.

Block 6: Innovation, Project Management and Entrepreneurship.

Block 7: Communication and “soft-skills”.

Study Visits:

- Frost-Trol It is a company dedicated to the design, manufacture, and commercialization of flexible solutions in commercial refrigeration. They offer their customers a wide range of environmentally sustainable and energy efficient commercial refrigeration engines, which guarantees the food safety of the products on display.

Its connection with the scientific world is constant, being an example of how to do it in the context of scientific transfer. During the visit, some of its modeling, manufacturing and design processes will be observed.

- Brainstorm is a company specialized in providing market leading solutions for real-time 3D graphics and virtual studios for television, film production and corporate presentations since 1993.

During the visit we will be shown the equipment they have and how they connect the development of new imaging technologies with the media world.

- Science, Technology and Business Park of UJI (ESPAITEC): It is the Scientific, Technological and Business Park of the Jaume I University of Castellón. An innovative space formed by technology-based companies, research groups, associations and public entities that work in different economic sectors with the aim of contributing, in a quantified and recognized way, to the socioeconomic development of the province of Castellón and to the diversification of its fabric business through innovation.

During the visit, the spaces in which companies connect, generating new ideas and business models, the meeting rooms and some of the technologies used in their day-to-day activities will be known.

Course Schedule:

	Block	Lecturers
1	Use of Geospatial Technologies in the context of Smart Cities.	Carlos Granell , Associate Professor, INIT Sven Casteleyn , Associate Professor, INIT
2	Interactive Visualization Tools applied to Urban Environment.	Nacho Miralles , Innovation Agent, INIT Águeda Cambroner , Ph.D Student, Computer Science, INIT
3	Digital Content Creation Tools: Virtualizing the City.	Inmaculada Remolar , Associate Professor, INIT Cristina Rebollo , Associate Professor, INIT
4	Artificial Intelligence applied to Virtual Environments.	Raúl Montoliu , Associate Professor, INIT Emilio Sansano , Doctor, Computer Science, INIT
5	The Internet of Things (IoT) in the field of the Smart Cities.	Sergi Trilles , Doctor, Computer Science Carlos Granell , Associate Professor, INIT
6	Innovation, project management and entrepreneurship.	Nacho Miralles , Innovation Agent Rubén García , Project Manager, INIT ESPAITEC
7	Communication and “soft-skills”	Alejandro Estelles , Audiovisual Communication Degree, INIT Rubén García , Project Manager, INIT ESPAITEC

DAY 1	DAY 2	DAY 3	DAY 4	DAY 5
B1 (2h) B6 (2h)	B1 (2h) B6 (2h)	B1 (2h) B6 (2h)	B3 (3h) B7 (1h)	B3 (3h) B7 (1h)

DAY 6	DAY 7	DAY 8	DAY 9	DAY 10
B1 (2h) B6 (2h)	B1 (2h) B6 (2h)	B1 (2h) B6 (2h)	B3 (3h) B7 (1h)	B3 (3h) B7 (1h)
DAY 11	DAY 12	DAY 13	DAY 14	DAY 15
B2 (2h) B5 (2h)	B2 (2h) B5 (2h)	B2 (2h) B4 (2h)	B4 (3h) B7 (1h)	B4 (3h) B7 (1h)
DAY 16	DAY 17	DAY 18	DAY 19	DAY 20
B2 (2h) B5 (2h)	B2 (2h) B5 (2h)	B2 (2h) B4 (2h)	B4 (2h) B7 (2h)	City Visit Farewell

Evaluation Method:

The evaluation of the different blocks, as well as the complete course, will be carried out on the basis of projects developed by the students and supervised by those responsible for the different blocks.