

2010 Virtual Prototyping SUMMER SCHOOL

Department of Mechanical Engineering, Politecnico di Milano, 21-24 September



Objectives of the school

Virtual Prototyping is generally recognized as a practice potentially useful for the reduction of the development costs of industrial products. A Virtual Prototype is an anticipation of a product shape-function that does not exist in reality yet, but that appears and behaves as it were real. Therefore, a Virtual Prototype interactively simulates how a product looks like, how it works, how users use it, etc. Research outcomes of recent years and the enormous improvements in price and performances in computer technology, have enabled the realization of **complex Virtual Prototypes integrating real-time, immersive or augmented, visual interaction, as well as haptic and sonic interaction.**

The construction of effective Virtual Prototypes **requires interdisciplinary competences, which go beyond engineering and IT disciplines**, and include crucial disciplines related to human aspects such as **human factors, human perception and cognition, ergonomics, usability etc.**

The **aim** of the Summer School is to create a contact and **a discussion point for international researchers and Ph.D. students** interested in theoretical issues, methods, techniques, technologies and practices related to Virtual Prototyping.

Specifically, the second edition of the school will focus on the following topics:

- **VR/AR technologies and applications, networked virtual applications**
- **Multimodal Interaction, Haptic and Sonic interaction**
- **Haptic technologies, and haptic interfaces design**
- **Human perception and cognition in computer interactions**

Modality

The second edition of the Summer School will be held in the Virtual Prototyping laboratory of the **Department of Mechanical Engineering of Politecnico di Milano on September 21-24**. The School will begin in the afternoon of September 21st and will end at the end of the morning of September 24th. The students that will arrive in the morning of the first day will be invited to visit the labs of our research group.

The School will host seminar talks given by international researchers, experts in various It and human-related disciplines to use in Virtual Prototyping.

The maximum number of students admitted to VP Summer School **is 25.**

The participation fee is set at € 400 and includes lunches, coffee breaks, dinner and educational materials. Participation is by registration sent via e-mail to the organizer together with a presentation letter, Francesco Ferrise (francesco.ferrise@polimi.it).

List of speakers

Christoph Anthes (from Johannes Kepler Universitat – Linz) *Developing Networked Virtual Environments with the inVRs Framework*

Gabriel Baud-Bovy (from Università Vita-Salute San Raffaele – Milano) *The psychophysical approach to measuring perceptions*

Monica Bordegoni (from Politecnico di Milano – Milano) *Virtual Prototyping to anticipate products shape and functions*

Umberto Cugini (from Politecnico di Milano – Milano) *AR technologies to bring virtual things into the real world*

Marc Ernst (from Max Planck Institute for Biological Cybernetics – Tübingen) *Multisensory integration as optimal percepts*

Vincent Hayward (from ISIR – Paris) *The various approaches to haptic interface design*

Maud Marchal (from IRISA/INRIA Rennes Bretagne Atlantique, Team BUNRAKU) *Optimizing Multimodal Interaction with Virtual Environments: Advanced Simulation and Advanced 3D Interaction*

Miguel Otaduy (from Universidad Rey Juan Carlos – Madrid) *Haptic interaction with complex deformable scenes*

Stephane Redon (from INRIA Grenoble – Rhone – Alpes) *Haptic interaction with multi-bodies: virtual prototyping of macro- and nano-systems*

Davide Rocchesso (from Università IUAV – Venezia) *Sketching and Prototyping Sonic Interaction Design*

Organization

Coordinators:

Monica Bordegoni

Umberto Cugini

Organizer:

Francesco Ferrise (francesco.ferrise@polimi.it)



Knowledge
Aided
Engineering,
Manufacturing
and
Related
Technologies

For further information visit the website of the school:

<http://www.kaemart.it/2010summerschool>

Tuesday 21 September – first day

11:00 AM

Welcome and visit to laboratories

12:45 AM

Lunch

2:00 PM

Monica Bordegoni - *Virtual Prototyping to anticipate products shape and functions*

3:30 PM

Christoph Anthes - *Developing Networked Virtual Environments with the inVRs Framework*

5:00 PM

Workshop and discussion

6:00 PM

End of the day

Wednesday 22 September – second day

9:30 AM

Gabriel Baud-Bovy - *The psychophysical approach to measuring perceptions*

11:00 AM

Coffee break

11:30 AM

Davide Rocchesso - *Sketching and Prototyping Sonic Interaction Design*

1:00 PM

Lunch

2:00 PM

Maud Marchall - *Optimizing Multimodal Interaction with Virtual Environments: Advanced Simulation and Advanced 3D Interaction*

3:30 PM

Workshop and discussion

5:00 PM

End of the day

Thursday 23 September – third day

9:30 AM

Miguel Otaduy - *Haptic interaction with complex deformable scenes*

11:00 AM

Coffee break

11:30 AM

Marc Ernst - *Multisensory integration as optimal percepts*

1:00 PM

Lunch

2:00 PM

Stephane Redon - *Haptic interaction with multi-bodies: virtual prototyping of macro- and nano-systems*

3:30 PM

Workshop and discussion

5:00 PM

Meeting

8:10 PM

Social dinner

Friday 24 September – fourth day

9:30 AM

Vincent Hayward - *The various approaches to haptic interface design*

11:00 AM

Coffee break

11:30 AM

Umberto Cugini - *AR technologies to bring virtual things into the real world*

1:00 PM

Short workshop and discussion

1:30 PM

End of the school