

2012 Virtual Prototyping SUMMER SCHOOL

Department of Mechanical Engineering, Politecnico di Milano, 16-20 July 2012



Objective 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 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 third edition of the school will focus on the following topics:

- VR/AR technologies and applications
- Multisensory Interaction and Multisensory Design
- Haptic technologies, and haptic interfaces design
- Human perception and cognition in human-computer interactions

How to participate

The third edition of the Summer School will be held in the Virtual Prototyping laboratory of the Department of Mechanical Engineering of Politecnico di Milano on July 16-20.

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

The PhD students will be recognized **5 credits (CFU)**.

The participation of the students of the PhD Doctorate School of the Politecnico di Milano is free of charge. The fee for external students is set at € 300,00 (VAT included), and includes coffee breaks and educational materials. Participation is by registration sent via e-mail to the local organizer together with a presentation letter, Francesco Ferrise (francesco.ferrise@polimi.it) by July 1st.

List of lecturers

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

Monica Bordegoni (Politecnico di Milano) - Virtual Prototyping: techniques and technologies

Umberto Cugini (Politecnico di Milano) - *The role of Virtual Prototyping in the product development process*

Francesco Ferrise (Politecnico di Milano) – *Development of multisensory Virtual Prototypes*

Michitaka Hirose (Cyber Lab – University of Tokyo) - *VR2.0 and Five senses Technology, Digital Museum, Digital Public Art and VR for Social Problems.*

Marco Maiocchi (Politecnico di Milano) - *Modelling emotional effects of perception and interaction*

Caterina Rizzi (Università degli Studi di Bergamo) – *Virtual Humans*

Charles Spence (University of Oxford) - *Auditory design: Matching sound to food, enhancing the design of product sounds, & sonic branding, Tactile design: haptic product design, tactile replicas and 3d printing for the art world and touch tables in museums, Crossmodal correspondences: Looking for links between sound symbolism & synaesthesia & their application to sensory marketing*

Alberto Gallace (Università Milano - Bicocca) - *The five senses within our brain: design for the human mind, virtual bodies in virtual words: how our mind deals with 'avatars', marketing that appeals to our senses and emotions*

Gennaro Monacelli (CNH) - *Product Development and Virtual simulation at Case New Holland*

Vincent Hayward (ISIR – Paris) - *Physical bases of haptic perception, The various approaches to haptic interface design*

Organization

Coordinators:

Monica Bordegoni

Umberto Cugini

Organizer:

Francesco Ferrise (francesco.ferrise@polimi.it)



Knowledge
Aided
Engineering,
Manufacturing
and
Related
Technologies

Monday 16 July – first day

10:00 -> 10:30

Monica Bordegoni - Welcome

10:30 -> 12:30

Monica Bordegoni – Virtual Prototyping: techniques and technologies

12:30 -> 13:00

Questions & Answers

13:00 -> 14:00

Lunch Break

14:00 -> 17:00

Michitaka Hirose - VR2.0 and Five senses Technology, Digital Museum, Digital Public Art and VR for Social Problems.

17:00 -> 17:30

Questions & Answers

17:30

End of the day

Tuesday 17 July – second day

09:00 -> 10:00

Michitaka Hirose - VR2.0 and Five senses Technology, Digital Museum, Digital Public Art and VR for Social Problems.

10:00 -> 11:30

Demos

11:30 -> 12:00

Questions & Answers

12:00 -> 14:00

Lunch Break

14:00 -> 17:00

Marco Maiocchi - Modelling emotional effects of perception and interaction

17:00 -> 18:30

Gennaro Monacelli - Product Development and Virtual simulation at Case New Holland

18:30

End of the day

Wednesday 18 July – third day

09:00 -> 13:00

Alberto Gallace - *The five senses within our brain: design for the human mind, virtual bodies in virtual words: how our mind deals with 'avatars', marketing that appeals to our senses and emotions*

13:00 -> 13:30

Questions & Answers

13:00 -> 14:00

Lunch Break

14:00 -> 18:00

Charles Spence - *Auditory design, matching sound to food, sonic branding, tactile replica and 3d printing for the art world and touch tables in museums*

18:00 -> 18:30

Questions & Answers

18:30

End of the day

Thursday 19 July – fourth day

09:00 -> 10:30

Caterina Rizzi – *Virtual Humans*

10:30 -> 12:00

Umberto Cugini – *The role of Virtual Prototyping in the product development process*

12:00 -> 12:30

Questions & Answers

12:30 -> 14:00

Lunch Break

14:00 -> 15:00

Francesco Ferrise – *Development of multisensory Virtual Prototypes*

15:00 -> 15:30

Questions & Answers

15:30 -> 18:30

Visit to the labs and demos

16:30 -> 18:30

End of the day

Friday 20 July – fifth and last day

09:00 -> 12:00

Vincent Hayward - *Physical bases of haptic perception*

12:00 -> 12:30

Questions & Answers

12:30 -> 14:00

Lunch Break

14:00 -> 17:00

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

17:00 -> 17:30

Questions & Answers

17:30 -> 18:30

Demos

18:30

End of the school

Venue

The school will be held in the “Sala Consiglio”, located in Via La Masa 1, Department of Mechanical Engineering at the first floor.

