Physics based simulation of clothes, hair and soft tissues

By

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Date: 19th January 2010, Tuesday
Time: 10.00am to 11.00am
Venue: Hilbert Space (PAP-02-02)
Host: Prof. Alfred Huan

Abstract:
In spite of the impressive advancements achieved during the last years in the domain of interactive physically based simulation, the real-time animation of complex deformable objects still represents a challenge. In order to cope with the resulting computational complexity, researchers continue seeking adequate trade-offs between simulation accuracy and computing performance. One compromise allowing to gain processing power without loosing physical plausibility is selective physically based optimization, i.e. reducing the computations to a predictable amount based on the influence of physical material properties on the mechanical behavior of soft bodies. In this talk, we analyze simulation approaches for structurally different objects and discuss both their specificities and commonalities. We focus on the contribution of physical parameters in the real-time simulation of 1D rods, 2D surfaces and 3D volumes, taking as examples hair, cloth and soft tissues.

About the Speaker:
Prof. Nadia Magnenat-Thalmann has pioneered research into virtual humans over the last 25 years. She obtained several Bachelor's and Master's degrees in various disciplines (Psychology, Biology and Chemistry) and a PhD in Quantum Physics from the University of Geneva in 1977. From 1977 to 1989, she was a Professor at the University of Montreal in Canada.
Since 1989, she is Professor at the University of Geneva where she founded the interdisciplinary multimedia research group MIRALab. She is the coordinator of several European Research Projects, among them the European Center of Excellence INTERMEDIA (http://intermedia.miralab.unige.ch/) and the European Center of Excellence 3D ANATOMICAL HUMANS (http://3dah.miralab.unige.ch/). She is also Editor-in-Chief of the Visual Computer Journal published by Springer Verlag, co-Editor-in-Chief of the journal Computer Animation and Virtual Worlds published by Wiley, and Associate Editor of IEEE Transactions on Multimedia. For her scientific and artistic work, she has received several awards, among them the nomination of woman of the year in Montreal 1988, the nomination as computer pioneer in the hall of fame at the Computer Museum of Padeborn in Germany and the selection of her work at the Museum of Modern Art in New York. She has published more than 500 papers on virtual humans and virtual worlds.
She has been invited to give more than 350 keynotes speeches in various institutions and organizations, among them the World Economic Forum in Davos. She has been Vice-Rector at the University of Geneva from 2003-2006 and she received this year a Dr honoris Causa from the Leizniz University of Hanovre. She is presently visiting Professor at the Nanyang Technological University in Singapore.

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