Lionel Reveret
Research Scientist
INRIA
Grenoble, France

"Motion Models for Markerless Video Tracking and Physically-Based Animation"

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1:00 – 2:30pm
Barus and Holley Room 190

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Recent results in computer vision allow to easily extract dense 3D information about surfaces in motion. These new source of data opens interesting perspectives for markerless motion analysis. In this talk, I will first present an overview of the works done at INRIA on such 3D data and how they are obtained from multiple videos. While these data are enough to stream visual appearance of a scene, they intrinsically lack of temporal coherence. Model tracking is required to provide time consistent trajectory of body features. To this end, a flexible model of shape deformation has been developed and applied for motion tracking of human motion data using manifold learning on Green coordinates. For neurophysiological studies, this model has been extended to track the complex body deformation involved in rodent motion. In the last part of the talk, I will present works on motion models based on physics laws: a simulation model using actuators from a reduced parametric space and an optimization-based model handling multiple contacts.

Lionel Reveret is a research scientist at INRIA Grenoble, France. He obtained his PhD from Grenoble University, followed by a postdoctoral stay at GeorgiaTech. His first research works have focused on modeling and analysis of talking faces. He joined INRIA in 2002 to develop research works on 3D animation and motion analysis from video. He is particularly interested in motion analysis and physically-based animation of human and animal. He is also working on biomechanical aspect of rodent locomotion for the neurophysiological study of equilibrium.

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