



Univerza v Novi Gorici

doc. dr. Gregor Veble

Vipavska c. 13, SI-5000 Nova Gorica, tel.: 05 365 35 17, fax: 05 365 35 27, e-mail: gregor.veble@ung.si

INVITATION

We are inviting you to the public lecture given by

Doc. Dr. Jernej Barbič

*(Assistant Professor and Viterbi Early Career Chair,
Computer Science, Viterbi School of Engineering,
University of Southern California),*

An algorithm for deformations, collision detection and contact between complex deforming geometry running at hard real-time rates

The lecture is a part of the »Scientific evenings« cycle of lectures.

It will take place on Tuesday, 22 May 2012 at 7PM

at the mansion Zemono near Vipava.

*The moderator will be Dr. Gregor Veble,
assistant professor of physics at the University of Nova Gorica.*

Fast deformable objects are very useful in robotics applications such as haptic rendering, where high simulation update rates (e.g., 1000 simulation steps per second) are required to maintain device stability. However, in order to simulate two rigid or deformable objects in contact with 6-DoF haptic feedback, it is also necessary to resolve contact between the two objects at haptic rates. With complex *deforming* geometry, this problem is difficult due to very short computation times (e.g., 1 millisecond) of each simulation cycle. I will present an algorithm, which can perform deformable object simulation, deformable collision detection and contact force and torque computation between two objects, at millisecond simulation rates. The algorithm scales well to both objects having complex geometry, and produces stable contact forces and torques, even at stiffness levels close to haptic device hardware limits.

Kindly invited!