



The Center for Control, Dynamical Systems, and Computation
University of California at Santa Barbara
Spring 2009 Seminar Series
Presents

Balancing and Vision

Gábor Stépán

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Friday, May 22, 2009 3:00 - 4:00 PM WEBB 1100

Abstract:

Balancing an inverted pendulum is a simple case study for stabilizing otherwise unstable equilibriums. In this lecture, human balancing is compared to robotic balancing and the small-amplitude chaotic oscillations are compared in the two cases. The analysis of the Newtonian equations including the time delays and the thresholds at the sensors provides possible conclusions on the large-scale control strategy used by the human brain, and it also supports theories how our visual system or the human balancing organ - called labyrinth - developed.

About the Speaker:

Professor Stépán received his PhD in 1982 and his DSc in 1994, both from the Hungarian Academy of Sciences and he became a full member of the Academy in 2007. He spent most of his academic career at the Budapest University of Technology and Economics, Hungary where he is currently Head of Department in Applied Mechanics and Dean of the Faculty of Mechanical Engineering. He was a visiting professor at Newcastle University, UK in 1988-1989 and at the California Institute of Technology in 1994-1995. His research interests are in the area of analytical mechanics, nonlinear dynamics, and time-delay systems. He is the author of the book *Retarded Dynamical Systems* (Wiley, NY, 1989). On the application side his research includes force control of robots, machine tool vibrations, dynamics of wheels, human balancing, and vehicular traffic.
