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Next Dynamics Colloquium

Biped Walking - a challenge for Dynamics and Control
Prof. Daniel J. Rixen
Chair of Applied Mechanics, Technical University Munich

Abstract

Walking on two legs is for humans so natural that one always wonders why it is so hard to let robots walk in a stable and robust manner. The fact is that robots are no humans and, maybe even more of a problem, that we do not really understand how human walk.

At the chair of Applied Mechanics, a first walking Robot (Johnnie) was built around 2000 and a second biped robot (Lola) developed at the chair was functioning in 2010. Over the last years, a significant research effort has been invested in developing and testing walking strategies for robots. Since a few years, we also work with experts from human motion science to see if we can learn something from walking strategies observed in humans.

In the presentation, after a short overview of the activities of the chair, the overall design and control architecture of the biped robots at the chair will be outlined. We will explain the basic ideas behind some of the important modules of the system, such as the strategies to plan the motion and some of the control methods implemented to enable the machine to walk in uncertain terrains.

More Information about the topic can be found at
www.amm.mw.tum.de/forschung/aktuelle-projekte/humanoider-roboter-lola/
www.youtube.com/channel/UCrZeG0XNWj-kyn2qC8jOLJg

Bio and research area

Daniel Rixen received his PhD degree from the University of Liège (Belgium) in 1997 and was a research fellow at the Center for Aerospace Structure in Boulder (Colorado). He headed the chair for Engineering Dynamics at the TU Delft (The Netherlands) from 2000 to 2012 and, since 2012, is directing the chair of Applied Mechanics at the TU Munich. His research focuses on numerical and experimental structural dynamics and on mechatronics.

Date: **Tuesday, April 9, 2019**
Time: **3:00 pm**
Place: **HIL E 3, ETH Hönggerberg, Stefano-Franscini-Platz 5**
Host: **Prof. Eleni Chatzi**