robotics Swiss National Centre of Competence in Research
NEWS BULLETIN
Issue 23

Varileg exoskeleton at Cybathlon 2016

This week, the world's first Cybathlon will take place in Zurich, Switzerland and today we present to you the second of the NCCR Robotics teams to be taking part in the competition, Varileg. The Cybathlon is the brainchild of NCCR Robotics co-director and ETH Zurich professor Robert Riener, and is designed to facilitate discussion between academics, industry and end users of assistive aids, to promote the position of people with disabilities within society and to push development of assistive technology towards solutions that are suitable for use all-day, every day.

VIDEO

In our privileged position as presenting sponsor we are also proud to have NCCR Robotics represented by three teams: In the Powered Arm Prosthesis Race, by the team LeMano; in the Brain Computer Interface (BCI) race, by the team EPFL Brain Tweakers; and in the Powered Exoskeleton Race by the team Varileg.

VariLeg is a project that comes out of ETH Zurich, and is supervised by NCCR Robotics member Stefan Schrade (Gassert Lab, RELab). The VariLeg is an experimental prototype of a new type of exoskeleton: the VariLeg uses actuated joints in two locations (hip and knee). The novelty of the device is a variable stiffness actuator in the knee providing variable impedance control. When a person without a disability takes a step, their knee automatically softens and stiffens as required, making small adjustments with muscles in the trunk and legs to compensate for unevenness in the ground and allowing for natural walking. One common problem encountered by exoskeleton users, and something that prevents exoskeletons from becoming more commonly used in everyday life, is that when joints cannot soften and stiffen. As a consequence, the leg cannot adapt to its environment causing discomfort, injury and risk of falling. This means that walking over anything but the smoothest of surfaces is not possible or at least very strenuous. It is this issue that the VariLeg is hoping to provide a solution for.

Varileg has been designed to navigate the tasks of everyday life featured in the Cybathlon. The team have been training with their pilots Philipp Wipfli and Werner Witschi two to three times a week over the summer.

When not mentoring teams for the Cybathlon, the Gassert Lab have been organising the Cybathlon Symposium which will take place today with over 330 participants, six keynotes, eight short talks, a podium discussion as well as an interactive poster session. The Symposium Booklet including programme and abstracts is available online.

Attend the Cybathlon in person or watch along live on the Cybathlon website to cheer along for Varileg. Additionally, for those in Switzerland, there will be a documentary on SRF on the 6th of October at 20.00 about the VariLeg project and the extended version will be aired on the 15th of October.

The second Swiss Robotics Industry Day organised by NCCR Robotics on 2nd November 2016 at the Swiss Tech Convention Center, Lausanne, will showcase cutting edge robotics research and SMEs from the 20 professorships in NCCR Robotics and the Swiss Robotics ecosystem. The Day is a vital opportunity for industry in fields that use robotics to network with potential partners, talents and collaborators as well as offering privileged access to new and emerging technologies. Find out more and request an invitation at swissroboticsindustry.ch

---

For further information please refer to:

Linda Seward, Communication Officer at NCCR Robotics: linda.seward@epfl.ch, +41 (0) 21 693 73 16

NCCR Robotics

The Swiss National Center of Competence in Robotics (NCCR Robotics) is a federally funded programme bringing together robotics laboratories from EPFL, ETH Zurich, University of Zurich and IDSIA to work on wearable, rescue and educational robots.

Keep up to date with NCCR Robotics

CONTACT DETAILS

NCCR Robotics Director
Prof. Dario Floreano
Publisher
NCCR Robotics
Management Team
Editor
Linda Seward
Web Editing
Mayra Lirot
Design
Alternative
Communication SA

NCCR Robotics
Office MED 11626, Station 9,
EPFL CH-1015 Lausanne
Switzerland
+41 21 693 69 39
nccr-robotics@epfl.ch / nccr-robotics.ch

06 October 2016