ETH zürich

RETHINKING CREATIVITY

ETH Meets You in Davos
During the World Economic Forum's Annual Meeting
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Towards dexterous robotic companions and co-workers

We are on the cusp of a new technological revolution. Advances in artificial intelligence promise to bring about new generations of robots that will become trusted social companions, skilled co-workers, and dependable assistants to those who need support for various everyday tasks. As future breeds of robots begin to enter our daily lives, they will encounter and have to effectively deal with countless situations. In order to operate within the human environment, robotic companions will need to have an intimate understanding of the physical laws that govern the world. Even at a very young age, human beings understand the general trajectory in which a ball will move when hit with a tennis racket, the way water pours from a cup, or the way in which a piece of paper deforms when folded. Robots currently lack this ability, which is why they are primarily limited to operating in highly controlled and structured environments – away from humans.

Under the direction of Professor Stelian Coros, ETH Zurich researchers in the Computational Robotics Lab (CRL) aim to overcome this technological barrier. They develop modelling and simulation tools creating the virtual proving-ground that allow for robots to safely and efficiently learn the motor skills they need to operate in dynamic, unstructured, people-centric environments.

In the ETH Zurich Pavilion demonstration during the World Economic Forum's Annual Meeting in Davos, Switzerland, the CRL team will demonstrate how their robot exploits numerical simulation models to play a simple cup-and-ball game and to animate marionettes. Just as children play such games to develop motor skills and creative problem-solving abilities, robots too can learn. This demonstration paves the way to future generations of dexterous robotic companions and co-workers.

References

PuppetMaster: Robotic Animation of Marionettes
http://crl.ethz.ch/papers/puppetMaster.pdf

Simon Zimmermann, Roi Poranne, James M. Bern, Stelian Coros
ACM Transactions on Graphics (Proc. ACM SIGGRAPH 2019)

Links to Bios / Publications

http://crl.ethz.ch/coros.html
https://n.ethz.ch/~simonzi/
https://inf.ethz.ch/personal/poranner/
https://n.ethz.ch/~jbern/

Images and Video Material

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