

# CS Seminar

## Zoom Research Seminar

### *Robots Learning (Through) Interactions*

**Professor Jens Kober**  
**Cognitive Robotics Department (CoR)**  
**Delft University of Technology**

**June 19, 2020**  
**Friday**  
**4:00 pm (HK Time) (GMT+8)**

**Zoom link: <https://hku.zoom.us/j/93201362975>**  
**Meeting ID: 932 0136 2975**

#### **Abstract:**

The acquisition and self-improvement of novel motor skills is among the most important problems in robotics. Reinforcement learning and imitation learning are two different but complimentary machine learning approaches commonly used for learning motor skills.

I will discuss various learning techniques we developed that can handle complex interactions with the environment. Complexity arises from non-linear dynamics in general and contacts in particular, taking multiple reference frames into account, dealing with high-dimensional input data, interacting with humans, etc. A human teacher is always involved in the learning process, either directly (providing demonstrations) or indirectly (designing the optimization criterion), which raises the question: How to best make use of the interactions with the human teacher to render the learning process efficient and effective?

All these concepts will be illustrated with benchmark tasks and real robot experiments ranging from fun (ball-in-a-cup) to more applied (unscrewing light bulbs).

#### **About the Speaker:**

Jens Kober is an associate professor at the TU Delft, Netherlands. He worked as a postdoctoral scholar jointly at the CoR-Lab, Bielefeld University, Germany and at the Honda Research Institute Europe, Germany. He graduated in 2012 with a PhD Degree in Engineering from TU Darmstadt and the MPI for Intelligent Systems. For his research he received the annually awarded Georges Giralt PhD Award for the best PhD thesis in robotics in Europe, the 2018 IEEE RAS Early Academic Career Award, and has received an ERC Starting grant. His research interests include motor skill learning, (deep) reinforcement learning, imitation learning, interactive learning, and machine learning for control.

**All are welcome!**

**For enquiries, please call 2859 2180 or email**  
**[enquiry@cs.hku.hk](mailto:enquiry@cs.hku.hk)**  
**Department of Computer Science**  
**The University of Hong Kong**

