

Welcome

Imitation and Coaching in Humanoid Robots

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<http://i61www.ira.uka.de/users/asfour/Humanoids2008.htm>

Organizers: Tamim Asfour, Aleš Ude, Gordon Cheng, and Rüdiger Dillmann

History

- Humanoids 2004
Building Humanoid Heads
- Humanoids 2005
Cognitive Architectures for Humanoids
- Humanoids 2006:
Recent methodologies towards the realization of "humanoid cognition"
- Humanoids 2007:
Benchmarking in humanoid robotics
- Humanoids 2008:
Imitation and Coaching in Humanoid Robots

Learning in Humanoid Robotics

- Learning complex humanoid behaviors:
High dimensional and continuous perception-action spaces
- How to guide the search process?
- How to develop higher-level representations suitable for faster learning?
- Some of the most notable solutions:
 - Learning by demonstration (imitation learning)
 - Coaching

Session I: Motion capture and imitation

- **Kinematic and Dynamic Adaptation of Human Motion for Imitation**
Katsu Yamane
Disney Research, Pittsburgh, CMU, USA
- **Real-time human control of robots for robot skill synthesis**
Erhan Oztop, Joshua Hale, Jan Babic, Mitsuo Kawato
ATR, Japan
- **Incremental learning of full-body human motion primitives for humanoid robots**
Dana Kulic
Nakamura-Yamane Laboratory, University of Tokyo, Japan
- **Transfer of Human Movements to Humanoid Robots**
M. Do, D. Gehrig, H. Kühne, P. Azad, P. Pastor, T. Asfour, T. Schultz, A. Wörner, R. Dillmann
University of Karlsruhe, Karlsruhe, Germany

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Session II: Hidden Markov Models

- **Adaptive acquisition of mimesis model based on communication between humanoid robots**
Tetsunari Inamura, National Institute of Informatics, Japan
Keisuke Okuno, The Graduate University for Advanced Studies, Japan
- **Online Recognition of Daily-Life Movements**
D. Gehrig, A. Fischer, **H. Kühne**, T. Stein, A. Wörner, H. Schwameder and T. Schultz
University of Karlsruhe, Karlsruhe, Germany
- **Motion Imitation and Recognition using Parametric Hidden Markov Models.**
Dennis Herzog, Ales Ude, Volker Krüger
Aalborg University Copenhagen, Denmark, Jozef Stefan Institute, Slovenia

Session III: Coaching and recognition

- **Toward coaching a robot by a non-invasive brain machine interface**
Kenji Suzuki
Dept. of Intelligent Interaction Technologies, University of Tsukuba, Japan
- **Learning Through Coaching in Cooperative Side-by-Side Human-Humanoid Interaction**
Peter Ford Dominey, Giorgio Metta, Francesco Nori, Lorenzo Natale
CNRS & INSERM U846, France, Italian Institute of Technology, Italy
- **Online Human Motion Prediction with Mixture of Gaussian Process Dynamical Models**
Takamitsu Matsubara (NAIST), Sang-Ho Hyon (JST-ICORP/ATR-CNS), Jun Morimoto (JST-ICORP/ATR-CNS)
- **Reconstituting and Evolving Robot Movements by PCA on Captured Human Motions**
Syungkwon Ra, ChangHwan Kim, Sang-Rok Oh, Paolo Dario
Korea Institute of Science and Technology, Korea, Scuola Superiore Sant'Anna, Italy,

Workshop material

- Abstracts and presentations will be available on the workshop homepage
- Selected papers for a special journal issue
 - Robotics and Autonomous Systems (RAS)
 - International Journal on Humanoid Robots