3.39 Robot Skills Transfer Toolbox

Keywords

Human-robot skills transfer; robot programming interfaces; optimal control; adaptive movements; gesture synthesis

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Corporate Sponsorship Program

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Software disclosure 11619

Functional description

Development of technologies to facilitate the re-programming of robots. We can provide tools and expertise for the automatic analysis and generation of movements, gestures and manipulation skills. The developed software components rise from the cross-fertilization of statistical learning, dynamical systems and optimal control, enabling skill transfer techniques that rely on the observation of human demonstrations and on intuitive interaction with the robot.

Innovative aspects

- Layman interface for robot programming
- Automatic adaptation of movements to new situations
- Handling of task variations and options
- Safe robot controlled by minimal intervention principle

Commercial application examples

- Human-robot skill transfer
- Optimal control based on human demonstrations
- Motion analysis and synthesis

More information

"Robot learning with task-parameterized generative models", Sylvain Calinon, in: *Proc. Intl Symp. on Robotics Research (ISRR)*, 2015.

Software & IPR status

The underlying software comes in two distinct and independent versions in *Matlab* and *C++* to facilitate both analysis and integration aspects. The *Matlab* version is fully compatible with the *GNU Octave* open source software. The C++ version is a library with minimal dependencies to facilitate its inclusion in other softwares. An independent and optional frontend GUI is available for monitoring and fast prototyping purposes.