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Summary

Economic as well as technological reasons require industrial robot systems with improved performance characteristics - particularly with respect to dynamics and accuracy. Parallel robots based on closed kinematic chains have been widely noticed to meet these increasing demands in production technology. However, for a long time parallel robots mainly attracted researchers while industrial acceptance was low and very few parallel robots were offered. This situation has considerably changed during the last two years. More and more parallel robotic systems appear on the market and prove to be a viable alternative to conventional serial robots.

One reason for the increased interest in parallel robots is that many exciting technologies and algorithms have emerged over the last decade which improve performance as well as robustness and interactivity of parallel robotic systems for real-world applications - hence enhancing user acceptance. Therefore, progress goes back to fundamental research work on parallel robots. This field is the domain of the Collaborative Research Center SFB 562 "Robotic Systems for Handling and Assembly", a research group established by the German Research Foundation (DFG) in 2000. Within an interdisciplinary framework, mechanical and electrical engineers as well as computer scientists from the Technische Universität Braunschweig and the German Aerospace Center (DLR) improve the performance of parallel robots and reduce particular drawbacks associated with these systems.

For the third time the colloquium on "Robotic Systems for Handling Assembly", organized by the SFB 562 brings together experts from the area of parallel manipulators from around the globe. Since the first Colloquiums in 2002 and 2005, many new research results have been obtained by the work of the SFB 562. Besides a presentation of this progress several well-known international experts in the field of parallel robotics from academia as well as from industry accepted to give a lecture on their latest research success. The colloquium is intended to offer a forum for exchange of new theoretical insights as well as practical experiments in parallel robotics.

This publication collects the presentations given during the colloquium. It provides an overview about present research results and future trends in parallel robotics. We are convinced that the workshop proceedings also will serve as a useful reference for those who attended the colloquium.