

Automated Testing of Workshop Robot Behavior

Authors : Arne Hitzmann, Philipp Wentscher, Alexander Gabel, Reinhard Gerndt

Abstract : Autonomous mobile robots can be found in a wide field of applications. Their types range from household robots over workshop robots to autonomous cars and many more. All of them undergo a number of testing steps during development, production and maintenance. This paper describes an approach to improve testing of robot behavior. It was inspired by the RoboCup @work competition that itself reflects a robotics benchmark for industrial robotics. There, scaled down versions of mobile industrial robots have to navigate through a workshop-like environment or operation area and have to perform tasks of manipulating and transporting work pieces. This paper will introduce an approach of automated vision-based testing of the behavior of the so called youBot robot, which is the most widely used robot platform in the RoboCup @work competition. The proposed system allows automated testing of multiple tries of the robot to perform a specific missions and it allows for the flexibility of the robot, e.g. selecting different paths between two tasks within a mission. The approach is based on a multi-camera setup using, off the shelf cameras and optical markers. It has been applied for test-driven development (TDD) and maintenance-like verification of the robot behavior and performance.

Keywords : supervisory control, testing, markers, mono vision, automation

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