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Studies on affecting factors of wheel slip and odometry error on real-time of wheeled mobile robots: A review

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Description In real-time applications, wheeled mobile robots are increasingly used and operated in extreme and diverse conditions traversing challenging surfaces such as a pitted, uneven terrain, natural flat, smooth terrain, as well as wet and dry surfaces. In order to accomplish such tasks, it is critical that the motion control functions without wheel slip and odometry error during the navigation of the two-wheeled mobile robot (WMR). Wheel slip and odometry error are disrupting factors on overall WMR performance in the form of deviation from desired trajectory, navigation, travel time and budgeted energy consumption. The wheeled mobile robot's ability to operate at peak performance on various work surfaces without wheel slippage and odometry error is directly connected to four main parameters, which are the range of payload distribution, speed, wheel diameter, and wheel width. This paper analyses the effects of those ...

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