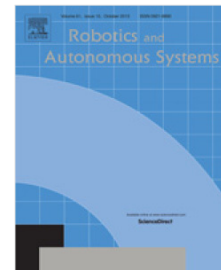


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Social Robotic Wheelchair Centered on Passenger and Pedestrian Comfort

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Abstract

The use of robot technology such as robotic wheelchairs is crucial to provide services for super-aging societies. A social issue in current robotic wheelchairs is the lack of passenger and pedestrian comfort considerations. This paper proposes a balanced navigation model for the passenger and pedestrians in terms of social issues regarding wheelchair navigation. The model considers comfort requirements for the passenger and pedestrians and is used to compute social wheelchair paths. Model validation was performed with human participants in the case of a single passenger and a pedestrian where experimental results show that overall comfort should be considered for computing socially accepted paths. Passengers and pedestrians scored the paths computed by the social planner as more comfortable than state of the art shortest paths.

Keywords: Human-Robot Comfortable Interaction, Social Navigation, Spatial Cognition

1. Introduction

Powered wheelchairs moving at velocities under 6 *km/h* are allowed to navigate alongside people and considered as pedestrians by Japanese law. If autonomous robotic wheelchairs are allowed to navigate on pedestrian paths, they

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