



SOCIALLY ACCEPTABLE SMART WHEELCHAIR NAVIGATION FROM HEAD ORIENTATION OBSERVATION

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Submitted: Feb, 28, 2014

Accepted: Apr. 24, 2014

Published: June 1, 2014

Abstract- Robotic wheelchairs should move among humans without bringing about uncomfortable situation to them. This paper tackles this issue to propose a method of navigation in indoor environments with presence of humans based on the observation of head information obtained from color and range images. Initially head regions in the color image are tracked and their orientations are estimated using AdaBoost based particle filter trained to classify multiple-pose faces. Then the head orientation data are integrated with the head position data in the range image to determine the wheelchair motion so that it can smoothly move among humans. Experimental results demonstrate the feasibility of the proposed approach

Index terms: Smart wheelchair navigation, human-shared environment, head-tracking.