Wheelchair motion control guide using eye gaze and blinks based on bug 2 algorithm

Abstract

In this work, we propose a new approach alongside the typical method, to control the motorized wheelchair using EOG signals. The new approach grants the user to look around without restraint, while the wheelchair navigates automatically to the desired goal point. Only EOG signals are used to control the wheelchair; eye gazing and blinking. The user can still appoint to control the wheelchair using the typical manual method in case the surroundings and obstacle structures do not assist with the new developed auto navigation method. In the new auto navigation approach the microcontroller can attain the goal point direction and distance by calculating the gaze angle of the user. Bug2 algorithm is utilized to navigate the wheelchair in the auto controlling method. Experimental tests show slightly different results than theory, because the bug algorithms cannot continuously update the robot's position data in experiments.