Bibliobrabot: Design of a robotic arm assistant in library for the disabled people in

Bibliobrabot: Diseño de un Brazo Robotico Asistente en Biblioteca para Discapacitados en Silla de Ruedas

Abstract

Libraries require physical adaptation to strengthen inclusion and equal accessibility for all people. This paper presents an assistant robot design focused on wheelchair users who demand library services. It is proposed as an improvement of the bibliographic content location system. This is done by adapting the robot to any classic shelf. The article contains the following analyses to check its efficiency: direct and inverse kinematics; dynamics through Newton-Euler's computational method; the workspace; trajectory generation; user interface. Finally, it exposes how the design works and that it can be implemented with an appropriate adaptation of the shelves for a correct disposition of the books. In addition, it proposes future improvements considering some limiting characteristics. © 2020 IEEE.

keywords

Inverse kinematics Inverse problems RoboticsRobots User interfaces Wheelchairs