

雙臂機器人之行動輔助設計

Walking Aid Design of a Humanoid

Dual-arm Robot

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In this research, a dual-arm mobile robot that is presented to walking support to a user. This robot has two operation modes, which can be converted by the user's need in any situation. When the robot is in grasping mode, the robot can fetch an object through computer vision and 6-DOF robot arms. On the other hand, when the user wants walking help, the robot can be configured to the supporting mode to provide walking assist. In this mode, the robot arms are configured to close and hold each other by the special designed buckle mechanism. In this research, a path planning strategy is proposed to achieve arm-closing and buckle locking and unlocking. In this way, the robot arms are configured into handrails for user support. Furthermore, a 6-DOF force/torque sensor is used to obtain the user's exertion force for estimation of the user's motion intent. The walking support system determines robot velocity based on a compliance controller to provide the mobility aids. Several experiments validate that the proposed dual-mode design and the walking support system can provide the user walking assist.

