The Remote Controllable Electric Wheelchair System combined Human and Machine Intelligence for Caregivers and Care Receivers

介護者と要介護者のための人間知能と人工知能を組み合わせた遠隔操作可能電動車いすの開発

Student No.: 201721685
Name: Satoshi Hashizume

Wheelchairs are essential means of transport for the older adults and the physically challenged. However, wheelchairs need to be accompanied by caregivers. As society ages and the number of care recipients increases, the burden on caregivers is expected to increase. In order to reduce the burden on caregivers, this research present Telewheelchair, an electric wheelchair equipped with a remote control function. The caregiver can remotely control the Telewheelchair by means of a head mounted display (HMD). This research conducted a user study on the wheelchair in four types of systems and investigated the time taken to achieve tasks. In order to reduce the burden on caregivers, this research developed an intelligent electric wheelchair. This research held workshops with caregivers, asked then regarding the problems in caregiving, and developed problem-solving methods. In the workshop, caregiver physical fitness and psychology of the older adults were found to be problems and a solution was proposed. This research implemented a cooperative operation function for multiple electric wheelchairs based on the workshop and demonstrated it at a nursing home. By listening to older adults, this research obtained feedback on the automatic driving electric wheelchair. Telewheelchair will enhance geriatric mobility and improve society by combining human intelligence and machine intelligence.

Academic Advisors: Principal: Yoichi Ochiai
Secondary: Hidehiko Hasegawa