Analyzing the characteristics of horizontal and vertical plane hand movement in human-human cooperative task

Abstract

The declining trend of population has given a growing problem in the future where the need to provide adequate healthcare for old people and person with disability with reducing human workforce. Therefore to address this issue, we are looking for a solution where human can cooperate with autonomous robot to reduce the workforce of providing these services. At present the majority of autonomous robots are mostly used in factories where speed and accuracy are given highest priority. In our research, we are focusing in the area where the robot that cooperate with human to lift or carry a human subject. In this area the robots are required to interact with human and move in such a fashion where it will move with human-like motion so that the human subject that is being move will not feel intimidated. In order to design robot that have smooth human like motion capability during human robot interaction in cooperative task, we need to understand how human-human understand each other, how and what kind of information was exchanged between them that enable human-human to be able to accomplish to move object with smooth qualities. Based on this, we need to design a system that is available to be used not only by robotic experts but by general population so that anybody can use this system for their care giving purpose. In this paper we conduct a study of how human-human utilize their sense in moving an object by utilizing a visual aid and we analyzed the smoothness of the motion by analyzing the hand jerk characteristic during the said task.