# Towards realizing collaborative rigid object transfer by a human hand and a robot manipulator

## Abstract

A requirement for human friendly robot had increased dramatically with the demand of assistive robotic having direct interaction with human. We were aiming at generating a smooth and natural cooperative transfers performed by a human-robot system. Prior to the development of such system, characteristics for smooth and natural cooperative object transfer in a human-human system were investigated. Specifically, we focused on the information exchange between subjects during execution of the cooperative task. We have investigated the effect of perceiving different part of the object as a means for exchanging information between subjects. We also considered the importance of having information of cooperative task initiation signal and targets position to the task smoothness (mediolateral and anteroposterior direction). The results indicated that perceiving the Centre part of the experimental object produced more frequent smooth and natural cooperative task executed in mediolateral direction but not for the task in anteroposterior direction. Also, regardless of Centre or End case, cooperative motion smoothness increased when time of initiation and target position and was available to both subjects. Those characteristics will be considered in designing the human-robot system.