Generating Robot Grasps for Everyday Tasks based on a Taxonomy for Occupational Therapy
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"Imitation Learning" aims to reduce the end-user's workload. Various systems have been constructed to date. However, regarding grasp generation, the number of imitatable grasps is limited due to structural restrictions of the robot hand. By expanding the grasp application domain to daily tasks including everyday grasps, we aim to realize a system for more sophisticated imitation. Since the conventional grasp taxonomy was incomplete in regard to everyday task performance, we adopted as grasp classification table, "Kamakura's grasp taxonomy", proposed in the field of occupational therapy(OT). "Tea Ceremony" is selected as an example everyday task and to reproduce the possible grasps appeared in this domain, 8 grasps are chosen from Kamakura’s 14 types of grasp. Then a new robot hand is designed which can generate and also recognize these 8 grasps. The developed robot hand is verified by generating grasps and also by recognizing the current grasp.

"Tea Ceremony" is chosen as an everyday manipulation task.

New robot hand is designed which can generate and recognize 8 grasps.

8 tactile sensors
4 F/T sensors
13 AC servos

Result of grasp and recognition of CMF grasp.

Publications