BIMANUAL CLOTH MANIPULATION PROTOCOL- SPREADING

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Authors	Irene Garcia-Camacho*, Martina Lippi*, Michael C. Welle, Hang Yin, Rika Antonova, Anastasiia Varava,Julia Borras, Carme Torras, Alessandro Marino, Guillem Alenya, Danica Kragic
Institution	KTH Royal Institute of Technology, Institut de Robòtica i Informàtica Industrial, CSIC-UPC
Contact information	igarcia@iri.upc.edu, mlippi@unisa.it
Purpose	Assess the ability of a bimanual robotic system to manipulate big pieces of clothes in dining room environment tasks.
Task Description	This task consists in taking a tablecloth and spreading it on a table, with different starting configurations.
Setup Description	List of objects and their descriptions: The following objects are used: **Table:** Any table with the following dimensions can be used: ● Width: $[70, 80]$ cm; ● Length: $[120, 185]$ cm; ● Height: $[72, 75]$ cm. **Tablecloth:** IKEA Fullkomlig 145×240 cm, available at the link: https://www.ikea.com/us/en/catalog/products/10343045/.
	Initial and target poses of the objects: The following starting configurations must be considered for the objects. **Tablecloth:** Four possible starting configurations are defined: ● Two pre-grasped points (**[pg2]**). Cloth is pre-grasped at two corners (unfolded); ● One pre-grasped point (**[pg1]**). Cloth is pre-grasped at one point; ● Tablecloth folded on the table (**[fd]**). The cloth is not pre-grasped and is placed folded on the table; ● Tablecloth random on the table (**[cr]**). Cloth is crumpled on the table. **Table:** The table can be placed anywhere in the workspace of the robots. To complete the task, the table must cover the table top.

	Description of the manipulation environment: The location of the tablecloth on the table for the folded and crumpled cases is not relevant for the task, as long as it is in the workspace of the robots. However, the authors need to report in the benchmark results if their system needs to object to be in a particular location. There is no clutter in the environment.
Robot/Hardware/Software/Subject Description	Targeted robots/hardware/software: Any bimanual setup with grasping capabilities can be employed
	Initial state of the robot/hardware/subject with respect to the setup: The robots may be located anywhere with respect to the table.
	Prior information provided to the robot: All the objects and table dimensions are known by the robot.
Procedure	1. Setup the camera to record the manipulation and a timer. 2. Prepare setup and the manipulation environment: table, tablecloth and robot. Place the tablecloth in the chosen initial configuration. 3. Execute the manipulation recording the results and measuring time. 4. Take the measurements on the tablecloth the evaluate the quality function. 5. Write execution time and measurements in the table. Repeat steps 2-5 five times.
Execution Constraints	Any strategy adopted must be the same for the 5 executions.