Specifications Table

Subject Area	Engineering
More specific subject Area	Robotics, Human-Robot-Interaction
Type of data	Videos, data of the test person
Data Acquisition	RGB-D camera (Microsoft Kinect), questionnaire
Data format	Raw, partly processed
Experimental factors	
Experimental features	Single test configuration: human executing task, camera registering,
Data source Location	EMARO Lab, Department of Informatics, Bioengineering, Robotics and Systems Engineering, University of Genoa, Genoa, Italy (44.402241, 8.960811)
Data accessibility	
Related research article	N/A

0 - Value of the Data

- Learning of a sequential process
- Finding a common pattern
- Computer vision: scene segmentation, object detection
- Human-like Memory: Learning, forgetting, recognition, retrieving
- HRI: shared planning between human and robot
- Planning
- Reconstruction of scene

1 - What is contained in the dataset?

Rosbags:

Raw data:

- Video of each experiment

Processed data:

- Ar_track_marker recognizes the markers pose and transformations

Topics used:

/kinect2/qhd/image_mono

/tf

2- What was used to acquire the dataset?

Kinect (Type: Microsoft kinectv2)
Model Table: Tabletop (size:) with 12 numbered pins, 4 L-shaped legs
Measurements of the Pins:

	PIN_1	PIN_2	PIN_3	PIN_4	PIN_5	PIN_6	PIN_7	PIN_8	PIN_9	PIN_10	PIN_11	PIN_12
x	-0.30	-0.05	0.03	0.27	0.24	0.24	0.27	0.04	-0.04	-0.28	-0.24	-0.28
y	0.16	-0.17	-0.15	-0.17	-0.02	0.05	0.19	0.17	0.17	0.20	0.05	-0.05

ar_track_alvar package

3- Method used during the experiments

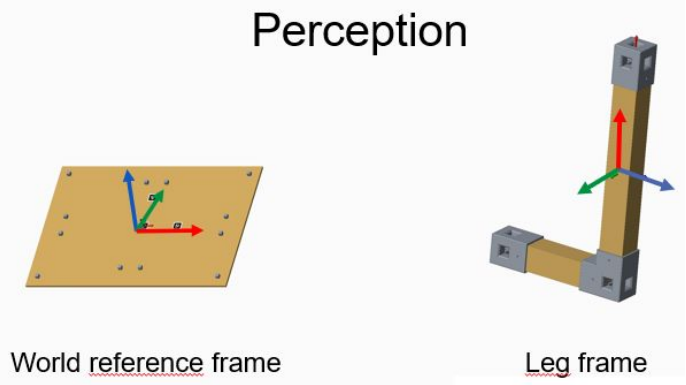
- QR-Codes to attach frames to the objects
  - World frame attached to the table (x- and y-axis within the plane of the table, z-axis perpendicular, colored in red, blue, and green respectively) with three markers, that correspond to fictive ones

	WORLD_CENTER	WORLD_X	WORLD_Y
Fictive Marker	42	43	44
Real Marker	16	17	18

  - Each leg has one frame attached to it (x-axis in direction of the long end), corresponding to a fictive marker(100, 104, 108, 112). 8 real markers attached to each leg, such that from each perspective at least one is visible

	Leg_0	Leg_4	Leg_8	Leg_12
Fictive marker	100	104	108	112
Real Markers Long bar	0	4	8	12
	1	5	9	13
	2	6	10	14
	3	7	11	15
Real Markers Short bar	24	33	19	37
	25	34	20	38
	26	35	21	39

	27	36	22	40

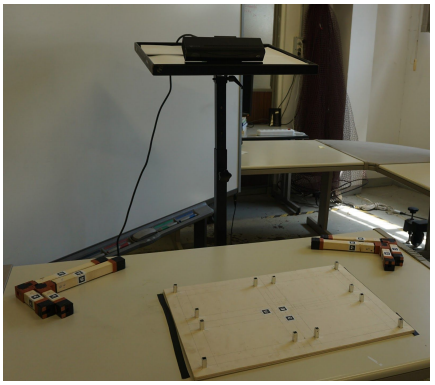


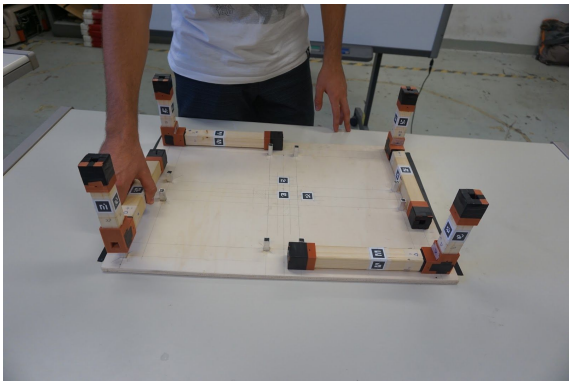
- The platform does not move, only the legs are moved, measurements are taken wrt tabletop/world frame
- User is asked to assemble the table (see instructions)

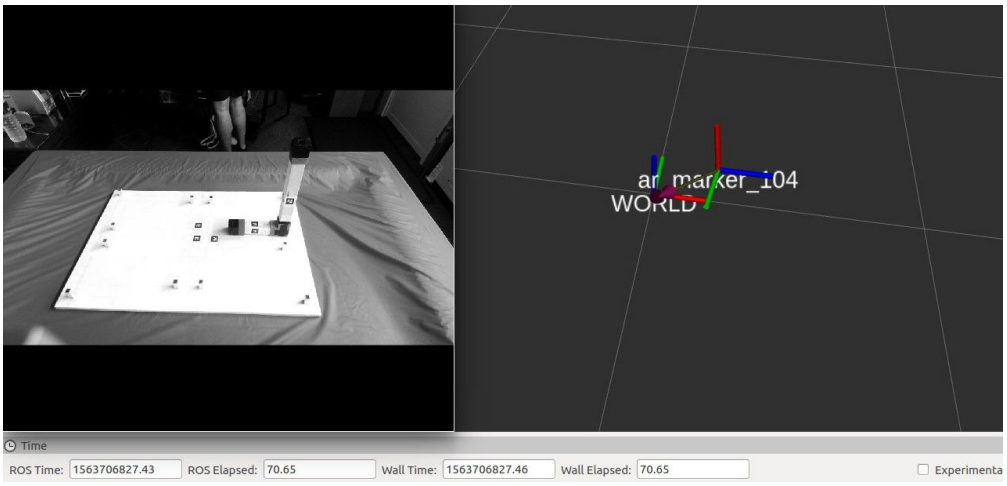
  This experiment is aimed at data collection and your choices will not be evaluated.
  Your task is to build a table following these instructions:
  - Try to make the table as stable as you can.
  - You can move just one leg at a time.
  - Do not move the platform.
  - Once the leg is in position, do not remove it.
  - Wait for the signal before starting to build the table and each leg.
  - Once the table is built, wait for us to dismount it.

  We will ask you to test 3 different configurations. We will tell you when to start between each test in order to be able to record the data correctly.
- Kinect registers the scene, records:
  - Positions of the markers
    - Wrt Kinect
    - Wrt world
    - wrt...
  - Video

4 - Experimental Setup







5 - How to interpret the data of the dataset

Limitations:

- Marker positions: Attached by hand (+/- 5°), Measured with a measuring tape (+/- 1 mm)
- Leg angles: 3D-printed links, wood…