

Data in Brief

Dataset of Bimanual Human-to-Human Object Handovers

--Manuscript Draft--

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Abstract:	<p>We present a multi-sensor dataset of bimanual human-to-human object handovers. The dataset consists of 240 recordings obtained from 12 pairs of participants performing bimanual object handovers with 10 objects, and 120 recordings obtained from the same 12 pairs of participants performing unimanual handovers with 5 of those objects. Each recording includes the giver and receiver's 13 upper-body bone position and orientation trajectories, position trajectories for the 27 markers placed on their upper bodies, object position and orientation trajectories, and two RGB-D data streams. The motion trajectories are recorded at 120Hz and the RGB-D streams are recorded at 30Hz. The recordings are annotated with the three handover phases: reach, transfer, and retreat. The dataset also includes four anthropometric measurements of the participants: height, waistline height, arm span, and weight. Our dataset could help investigations of the bimanual reaching motions and grasps utilized by humans while performing handovers. Also, it can be used to train robots to perform bimanual object handovers with humans.</p>
Suggested Reviewers:	<p>Alessandro Carfi alessandro.carfi@dibris.unige.it Author of a similar dataset : A multi-sensor dataset of human-human handover</p>
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Dear Editor,

Enclosed is a manuscript titled “Dataset of Bimanual Human-to-Human Object Handovers” to be considered for publication in the Data in Brief journal.

We believe that this manuscript is suitable for the scope of this journal as it describes a multi-sensor dataset of bimanual human-to-human object handovers. To the best of our knowledge, there is no public dataset of human-to-human handovers of objects requiring bimanual grasps, even though such handovers are equally important and even more challenging. There are numerous applications where bimanual handovers are useful or even necessary. Bimanual handovers are necessary when handing over large rigid objects, deformable objects, spherical objects, and delicate objects. Also, in some cultures, it is a rule of etiquette to hand over objects with two hands. This dataset is useful for studying various features of bimanual handovers between two persons, such as handover location, object orientation, grasp configuration, and reaching velocity profile. This dataset can be used to train a robot to perform the tasks of human-to-robot and robot-to-human handovers which are essential for human-robot collaboration. Therefore, our dataset has wide-ranging applications in the domain of human-robot interaction and human motor skills.

We declare that this manuscript is original, has not been published before and is not currently under consideration for publication elsewhere. All authors have approved the manuscript and agree with its submission to this journal. We know of no conflicts of interest associated with this publication, and there has been no significant financial support for this work that could have influenced its outcome.

Thank you for your consideration of this manuscript.

Sincerely,

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