Capturing Hands in Action using Discriminative Salient Points and Physics Simulation

Sequences

Table 1. Sequences. *Set A* and *Set C* are used for evaluation of the components of the presented pipeline, while *Set B* is used as a comparison benchmark with the FORTH tracker [1]. All frames of *Set A* and *Set C* are used for evaluation, while for the sequences of *Set B* the evaluation starts at the noted *starting frame* ("ID Start"), since initialization of the compared trackers is different, while the last frame is rejected, since the public software of [1] failed for the last frame of one sequence. The number of the hands in each scene is noted, as well as the characterization of the collisions that take place in the scene: *some*, *severe* and *no apparent* collision. Only two hand sequences can be characterized by *severe* collisions. This characterization applies noly for the *Set A* and *Set B*. The characterization for occlusions applies only for the *Set C* and refers to the occlusion of a finger during manipulation of an object. The public software of [1] can handle tracking of only one hand

	Sequence	*ID*	*Hands*	*Total*	*ID Start*	*ID End*	*Collision*	*Occlusion*
Set A	*Walking*	1	2	231	0	$total-1$	*Severe*	*N/A*
	Crossing	2	2	153	0	$total-1$	*Severe*	*N/A*
	Crossing & Twisting	3	2	155	0	$total-1$	*Severe*	*N/A*
	Tips Touching	4	2	173	0	$total-1$	*Some*	*N/A*
	Dancing	5	2	265	0	$total-1$	*Severe*	*N/A*
	Tips Blending	6	2	136	0	$total-1$	*No*	*N/A*
	Hugging	7	2	194	0	$total-1$	*Severe*	*N/A*
	Grasping	8	1	106	0	$total-1$	*No*	*N/A*
	Flying	9	1	138	0	$total-1$	*No*	*N/A*
	Rock Gesture	10	1	139	0	$total-1$	*Some*	*N/A*
	Bunny Gesture	11	1	134	0	$total-1$	*Some*	*N/A*
Set B	*Bunny Gesture*	12	1	727	420	$total-2$	*Some*	*N/A*
	Flying	13	1	778	480	$total-2$	*No*	*N/A*
	Rock Gesture	14	1	378	250	$total-2$	*Some*	*N/A*
Set C	*Moving a Ball*	15	1	209	0	$total-1$	*N/A*	*No*
	Moving a Ball	16	2	197	0	$total-1$	*N/A*	*No*
	Bending a Pipe	17	2	400	0	$total-1$	*N/A*	*No*
	Bending a Rope	18	2	296	0	$total-1$	*N/A*	*No*
	Moving a Ball	19	1	251	0	$total-1$	*N/A*	*Yes*
	Moving a Cube	20	1	186	0	$total-1$	*N/A*	*No*
	Moving a Cube	21	1	237	0	$total-1$	*N/A*	*Yes*

References

1. Oikonomidis, I., Kyriazis, N., Argyros, A.: Efficient model-based 3d tracking of hand articulations using kinect. In: BMVC. pp. 101.1–101.11 (2011)