

# Martial Arts, Dancing and Sports dataset: a Challenging Stereo and Multi-View Dataset for Human Pose Estimation – Supplementary Material

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## 1. Supplementary material

### 1.1. Re-initialization results

We show all figures of the re-initialization experiment results described in Section 5.5.1 of the paper “Martial Arts, Dancing and Sports dataset: a Challenging Stereo and Multi-View Dataset for Human Pose Estimation”. The results are results on Jazz, Hip-hop and sports (badminton, basketball, football and volleyball) for multi-view and depth sequences. The black dash line is the re-initialization frame.

### 1.2. Videos

This supplementary contains the videos for pose tracking results described in Section 5 of the paper. There are 30 videos showing multi-view results: 6 for each action category. There are also 30 videos showing results on depth video: 6 for each action category.

The multi-view videos present the original image, the ground-truth pose and results of baseline algorithms. The baselines for multi-view are the bi-directional likelihood [1], the robust ECPBL likelihood [2] and the TGP algorithm [3]. The tracking error is showed in the top-right corner for each algorithm. A green value indicates that the error is smaller than 80 mm, while red one indicates that the error is larger than 80.

The depth videos show the original right image, the depth map, the ground-truth skeleton with results of baseline algorithms. For the Tai-chi, the baselines are the basic linear likelihood, uni-directional likelihood and the robust likelihood with APF tracker, as well as the results of the PDT tracker [4], the TGP algorithm [3] and the GMM-based shape and pose estimation algorithm [5]. For other action categories, the baselines are the linear likelihood, uni-directional likelihood, the robust likelihood and the TGP algorithm [3].

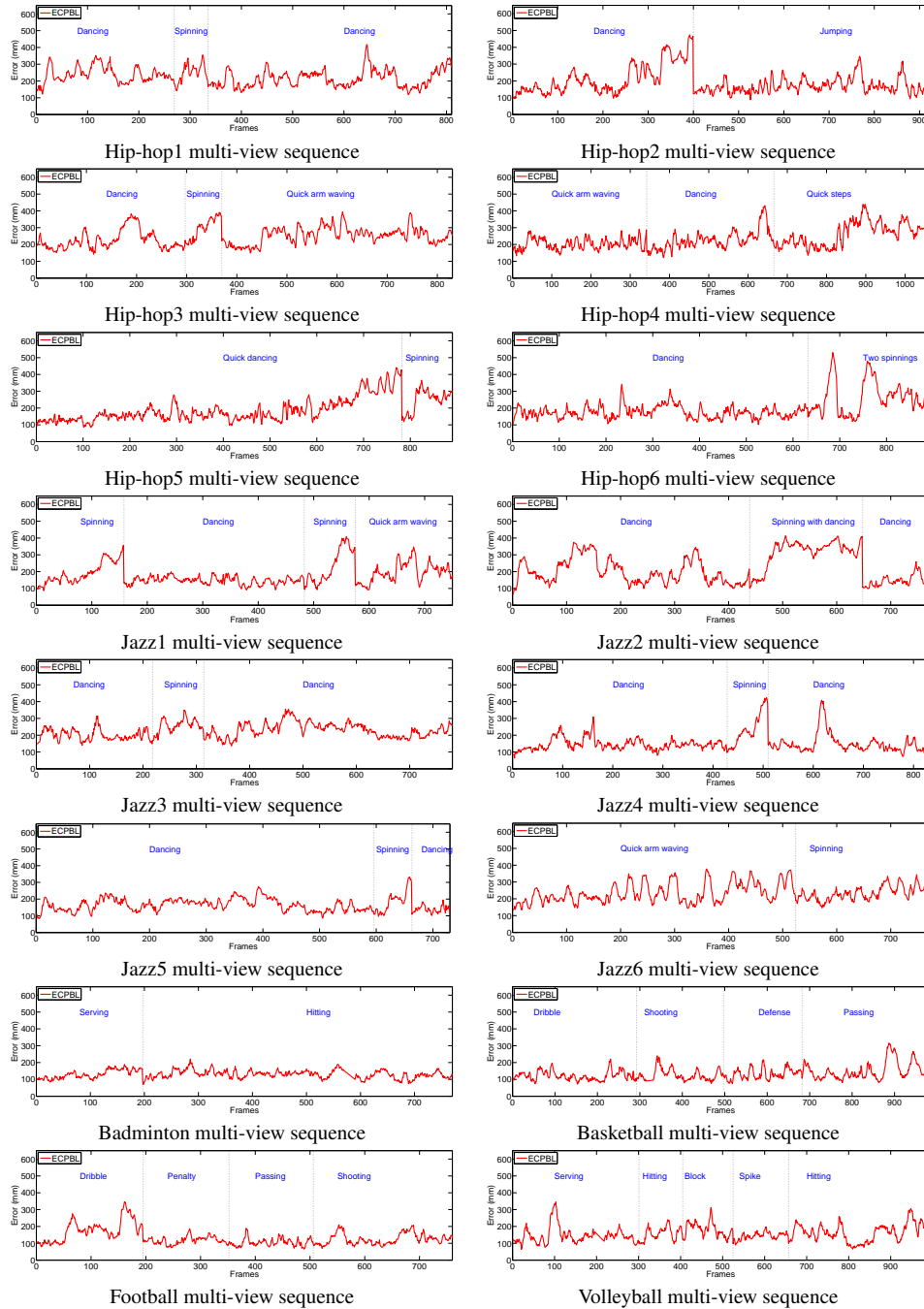


Figure 1: Tracking errors over time of re-initialization experiments on multi-view videos. The sequences are divided into several sub-sequences by the action type (denoted by the black dashed line). At the beginning of each sub-sequence, the APF-based tracker is re-initialized with the ground-truth pose.

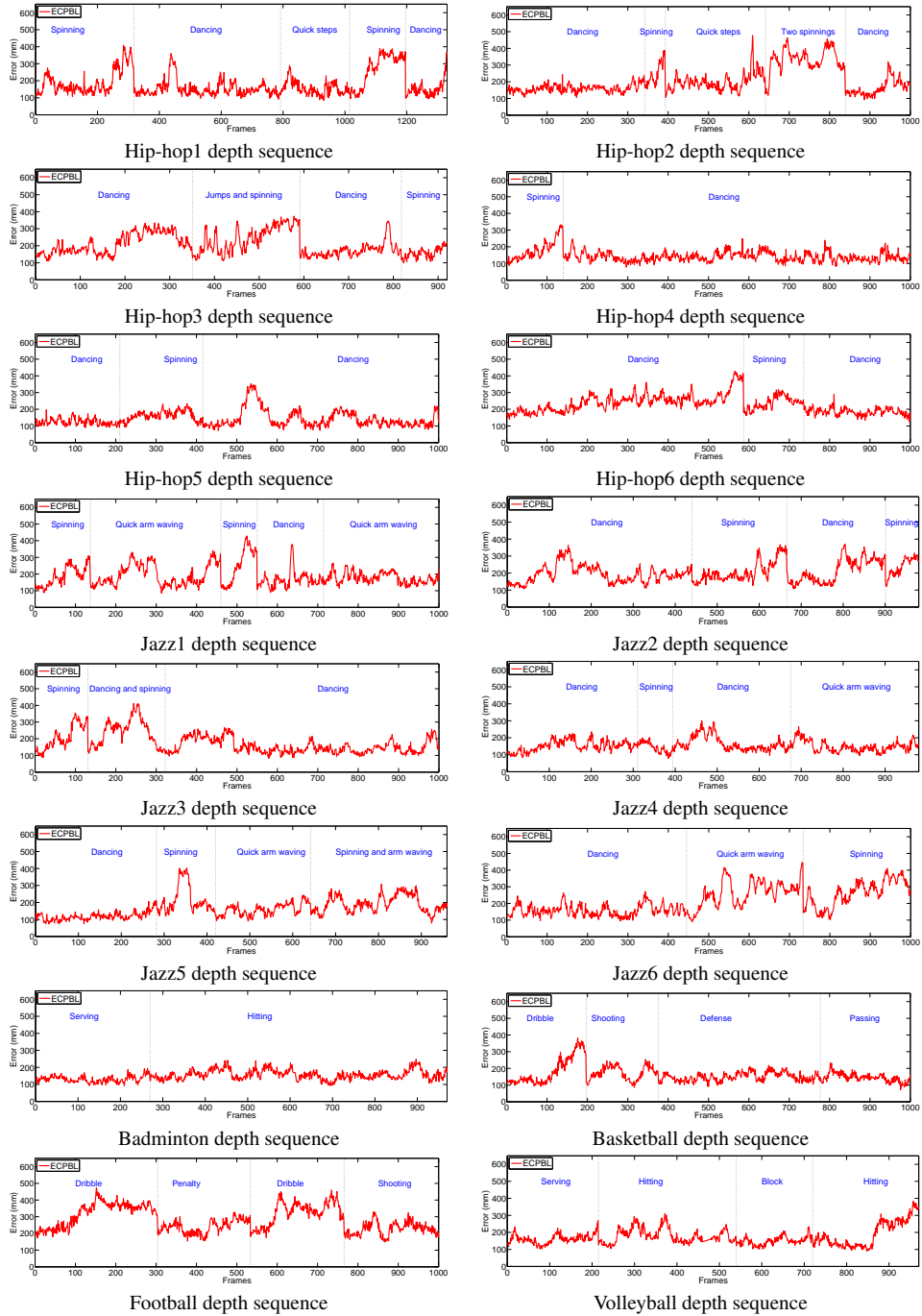


Figure 2: Tracking errors over time of re-initialization experiments on depth videos. The sequences are divided into several sub-sequences by the action type (denoted by the black dashed line). At the beginning of each sub-sequence, the APF-based tracker is re-initialized with the ground-truth pose.

All videos are in Quicktime format (h.264), playable with the most recent Quicktime player (<http://www.quicktime.com/>). We have put these videos on Youtube: [multi-view videos](#)<sup>1</sup> and [depth videos](#).<sup>2</sup> Also, these videos are on [our website](#).<sup>3</sup>

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<sup>1</sup><http://www.youtube.com/playlist?list=PLvxKxcEDhF8o-hMgnhhr-9EUeBOSrOkmr>

<sup>2</sup>[http://www.youtube.com/playlist?list=PLvxKxcEDhF8pDh95BdZ1et3U5go\\_3oqYW](http://www.youtube.com/playlist?list=PLvxKxcEDhF8pDh95BdZ1et3U5go_3oqYW)

<sup>3</sup><http://visal.cs.cityu.edu.hk/static/images/MAPD/>

<b>name</b>	<b>description</b>
Taichi-multi-1	Tracking results on Tai-Chi multi-view Action1 sequence.
Taichi-multi-2	Tracking results on Tai-Chi multi-view Action2 sequence.
Taichi-multi-3	Tracking results on Tai-Chi multi-view Action3 sequence.
Taichi-multi-4	Tracking results on Tai-Chi multi-view Action4 sequence.
Taichi-multi-5	Tracking results on Tai-Chi multi-view Action5 sequence.
Taichi-multi-6	Tracking results on Tai-Chi multi-view Action6 sequence.
Karate-multi-1	Tracking results on Karate multi-view Action1 sequence.
Karate-multi-2	Tracking results on Karate multi-view Action2 sequence.
Karate-multi-3	Tracking results on Karate multi-view Action3 sequence.
Karate-multi-4	Tracking results on Karate multi-view Action4 sequence.
Karate-multi-5	Tracking results on Karate multi-view Action5 sequence.
Karate-multi-6	Tracking results on Karate multi-view Action6 sequence.
Jazz-multi-1	Tracking results on Jazz multi-view Action1 sequence.
Jazz-multi-2	Tracking results on Jazz multi-view Action2 sequence.
Jazz-multi-3	Tracking results on Jazz multi-view Action3 sequence.
Jazz-multi-4	Tracking results on Jazz multi-view Action4 sequence.
Jazz-multi-5	Tracking results on Jazz multi-view Action5 sequence.
Jazz-multi-6	Tracking results on Jazz multi-view Action6 sequence.
HipHop-multi-1	Tracking results on Hip-hop multi-view Action1 sequence.
HipHop-multi-2	Tracking results on Hip-hop multi-view Action2 sequence.
HipHop-multi-3	Tracking results on Hip-hop multi-view Action3 sequence.
HipHop-multi-4	Tracking results on Hip-hop multi-view Action4 sequence.
HipHop-multi-5	Tracking results on Hip-hop multi-view Action5 sequence.
HipHop-multi-6	Tracking results on Hip-hop multi-view Action6 sequence.
Sports-multi-1	Tracking results on Sports multi-view Action1 sequence.
Sports-multi-2	Tracking results on Sports multi-view Action2 sequence.
Sports-multi-3	Tracking results on Sports multi-view Action3 sequence.
Sports-multi-4	Tracking results on Sports multi-view Action4 sequence.
Sports-multi-5	Tracking results on Sports multi-view Action5 sequence.
Sports-multi-6	Tracking results on Sports multi-view Action6 sequence.

<b>name</b>	<b>description</b>
Taichi-depth-1	Tracking results on Tai-Chi depth Action1 sequence.
Taichi-depth-2	Tracking results on Tai-Chi depth Action2 sequence.
Taichi-depth-3	Tracking results on Tai-Chi depth Action3 sequence.
Taichi-depth-4	Tracking results on Tai-Chi depth Action4 sequence.
Taichi-depth-5	Tracking results on Tai-Chi depth Action5 sequence.
Taichi-depth-6	Tracking results on Tai-Chi depth Action6 sequence.
Karate-depth-1	Tracking results on Karate depth Action1 sequence.
Karate-depth-2	Tracking results on Karate depth Action2 sequence.
Karate-depth-3	Tracking results on Karate depth Action3 sequence.
Karate-depth-4	Tracking results on Karate depth Action4 sequence.
Karate-depth-5	Tracking results on Karate depth Action5 sequence.
Karate-depth-6	Tracking results on Karate depth Action6 sequence.
Jazz-depth-1	Tracking results on Jazz depth Action1 sequence.
Jazz-depth-2	Tracking results on Jazz depth Action2 sequence.
Jazz-depth-3	Tracking results on Jazz depth Action3 sequence.
Jazz-depth-4	Tracking results on Jazz depth Action4 sequence.
Jazz-depth-5	Tracking results on Jazz depth Action5 sequence.
Jazz-depth-6	Tracking results on Jazz depth Action6 sequence.
HipHop-depth-1	Tracking results on Hip-hop depth Action1 sequence.
HipHop-depth-2	Tracking results on Hip-hop depth Action2 sequence.
HipHop-depth-3	Tracking results on Hip-hop depth Action3 sequence.
HipHop-depth-4	Tracking results on Hip-hop depth Action4 sequence.
HipHop-depth-5	Tracking results on Hip-hop depth Action5 sequence.
HipHop-depth-6	Tracking results on Hip-hop depth Action6 sequence.
Sports-depth-1	Tracking results on Sports depth Action1 sequence.
Sports-depth-2	Tracking results on Sports depth Action2 sequence.
Sports-depth-3	Tracking results on Sports depth Action3 sequence.
Sports-depth-4	Tracking results on Sports depth Action4 sequence.
Sports-depth-5	Tracking results on Sports depth Action5 sequence.
Sports-depth-6	Tracking results on Sports depth Action6 sequence.

- [1] L. Sigal, A. O. Balan, M. J. Black, Humaneva: Synchronized video and motion capture dataset and baseline algorithm for evaluation of articulated human motion, *International Journal of Computer Vision* 87(1-2) (2010) 4–27.
- [2] W. Zhang, L. Shang, A. B. Chan, A robust likelihood function for 3d human pose tracking, *IEEE Transactions on Image Processing* (2014) to appear.
- [3] L. Bo, C. Sminchisescu, Twin gaussian processes for structured prediction, *International Journal of Computer Vision* 87(1-2) (2010) 28–52.
- [4] T. Helten, A. Baak, G. Bharaj, M. Muller, H.-P. Seidel, C. Theobalt, Personalization and evaluation of a real-time depth-based full body tracker, in: *3DTV-Conference, 2013 International Conference on*, IEEE, 2013, pp. 279–286.
- [5] M. Ye, R. Yang, Real-time simultaneous pose and shape estimation for articulated objects using a single depth camera, in: *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, IEEE, 2014, pp. 1–8.