Supplementary material for Multi-Kinect Avatar Capture with Robust Calibration and Alignment

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1 System setup

Fig. 1: The capturing system setup. We show the system without and with human target respectively

As shown in Figure 1, the hardware setup of our system is based on 8 Kinect One cameras, which are fixed on 4 poles symmetrically distributed on a circle with radius of about one meter. For each pole, two cameras are located at different height to capture the upper and lower part of the body from the same viewing direction, while reducing the spatial occupation of the system compared with [2]. We connect all the cameras to the desktop PC through a USB-PCI adaptor card such that data can be captured and collected from different views simultaneously.

2 Additional results

ICP	Non-rigid ICP	our method
0.00475686	0.00438185	0.00419615
0.00437787	0.00375167	0.00385607
0.00490372	0.00418299	0.0041061
0.00428622	0.00433294	0.00420506
0.00487387	0.00475633	0.0043115
0.00417856	0.00403136	0.00393687
0.00422222	0.00411214	0.00390228

Table 1: A quantitative evaluation of our system

In order to quantitatively evaluate our registration results, we sample the resulting patches and measure the average distance to the closest point on any other patch. We compare our results on 7 patches with those obtained using the correspondence based non-rigid registration algorithm used by Li et al [1], and to rigid ICP [3].

References

1. Hao Li, Etienne Vouga, Anton Gudym, Linjie Luo, Jonathan T. Barron, and Gleb Gusev. 3d self-portraits. ACM SIGGRAPH Asia, 2013.
2. Zhenbao Liu, Hongliang Qin, Shuhui Bu, Meng Yan, Jinxing Huang, Xiaojun Tang, and Junwei Han. 3d real human reconstruction via multiple low-cost depth cameras. *Signal Processing*, 112:162–179, 2015.
3. Kok-Lim Low. Linear least-squares optimization for point-to-plane icp surface registration. *Chapel Hill, University of North Carolina*, 4(10), 2004.