Dynamic Multiview Refinement of 3D Hand Datasets using Differentiable Ray Tracing

Giorgos Karvounas[1,2]   Nikolaos Kyriazis[1]   Iason Oikonomidis[1]   Antonis Argyros[1,2]

[1]Institute of Computer Science, FORTH, Greece
[2]Computer Science Department, University of Crete, Heraklion, Greece
{gkarv, kyriazis, oikonom, argyros}@ics.forth.gr

1. Additional Results

In Figs. 1 to 4 we present additional results from the InterHand2.6M [1] dataset that we could not introduce in the main paper due to space limitations. We demonstrate accurate performance of the proposed method in challenging hand gestures performed by diverse subjects, including cases where the hands are self-occluded (*e.g.*, in the "surfer" pose) or where some of the fingers are in contact (*e.g.*, in the "okay" pose).

A video presentation showcasing the proposed method can be found in the accompanying video file.

References

[1] Gyeongsik Moon, Shoou-I Yu, He Wen, Takaaki Shiratori, and Kyoung Mu Lee. Interhand2. 6m: A dataset and baseline for 3d interacting hand pose estimation from a single rgb image. In *European Conference on Computer Vision*, pages 548–564. Springer, 2020. 1
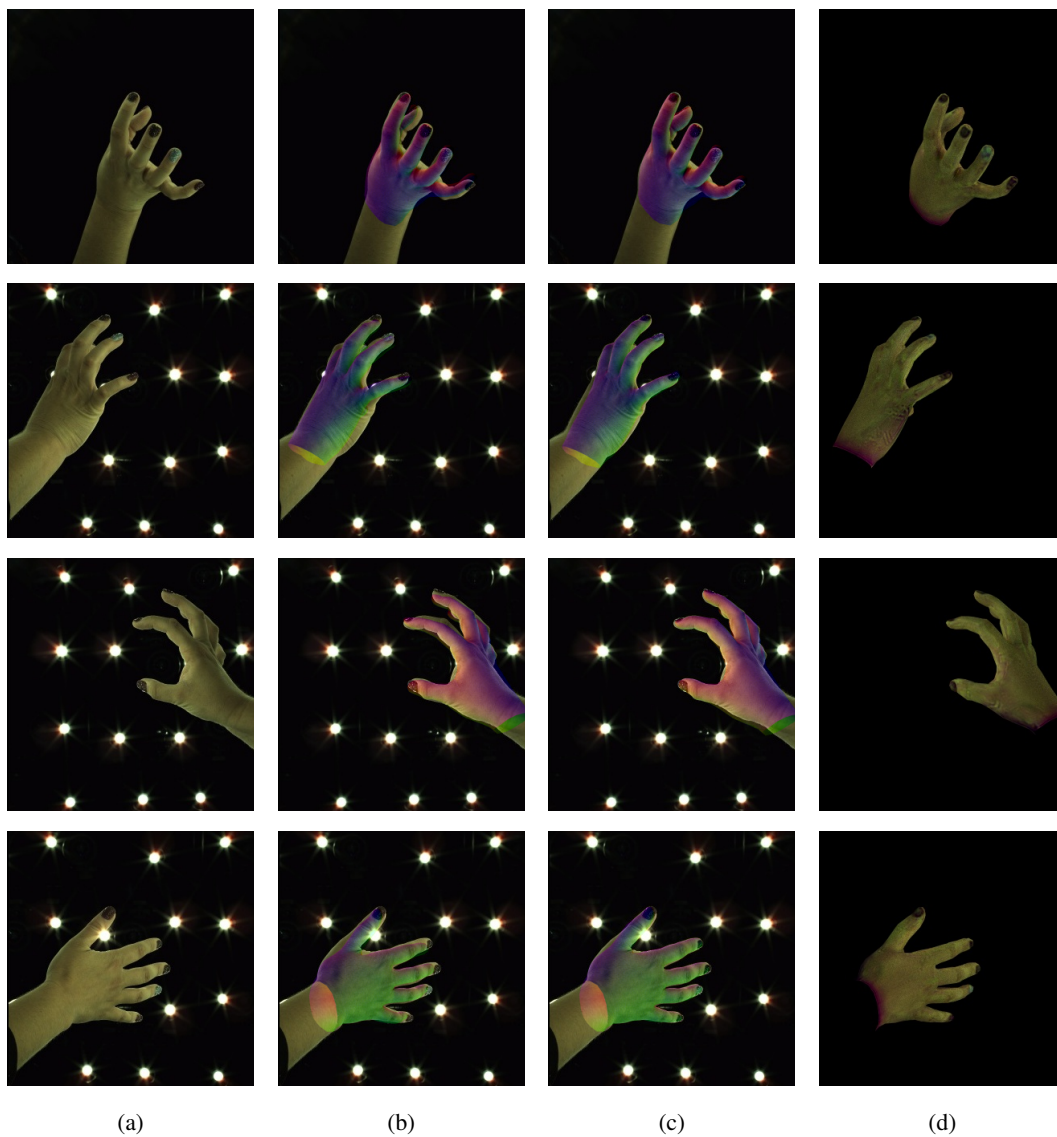
Figure 1: Dino sequence: The columns represent (a) actual data, (b) bundled annotations, (c) the resulting annotation of Dynamic Multi-View Refinement (DMVR), superimposed on the relevant observations, and (d) the synthesized hand appearance. DMVR is capable of capturing complex details of the hand, such as the color of the nails.

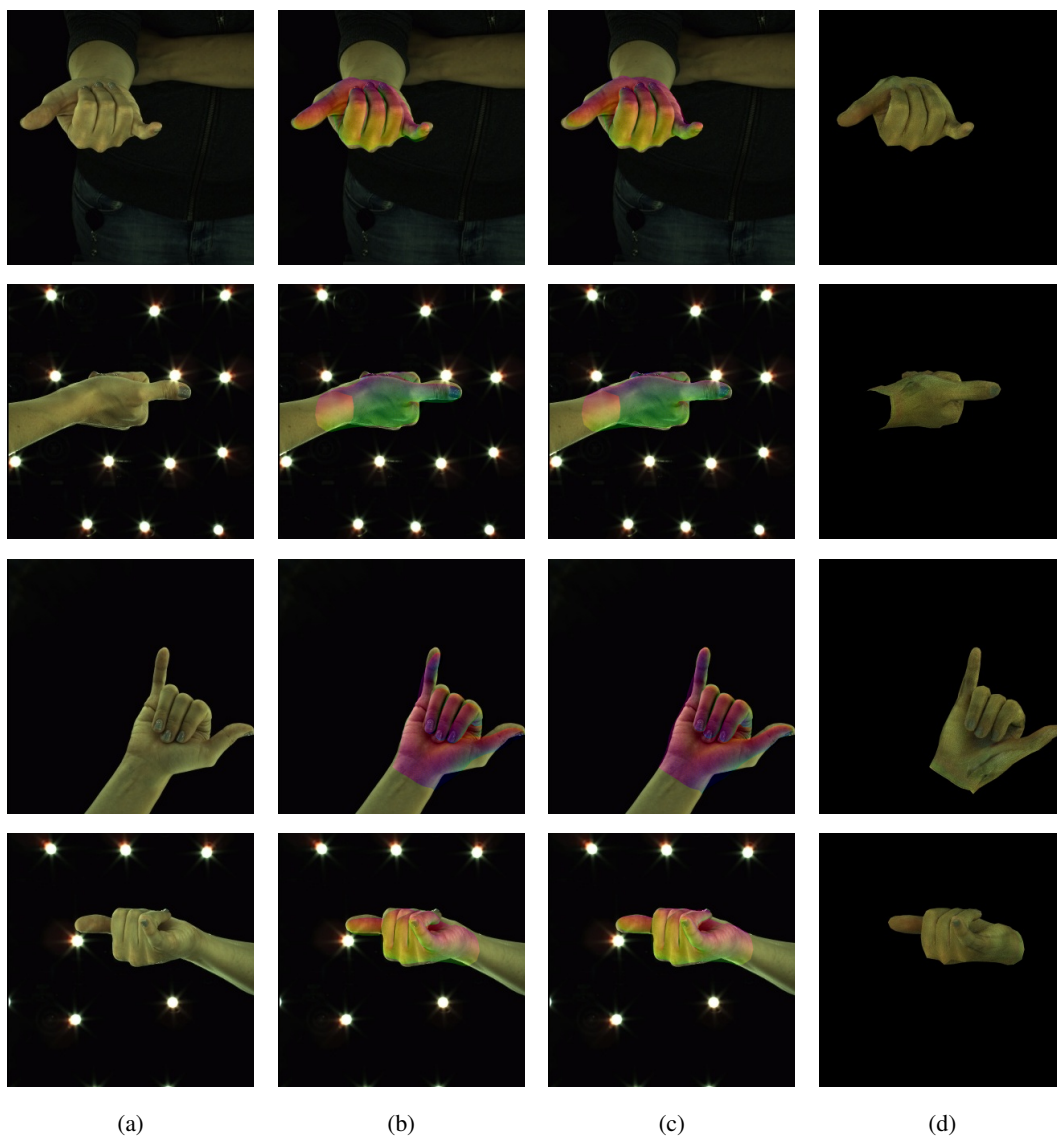|			
(a)	(b)	(c)	(d)

Figure 2: Surfer sequence: The columns are similar to Fig. 1. DMVR is capable of accurately estimating gestures in which the fingers are held closely together.
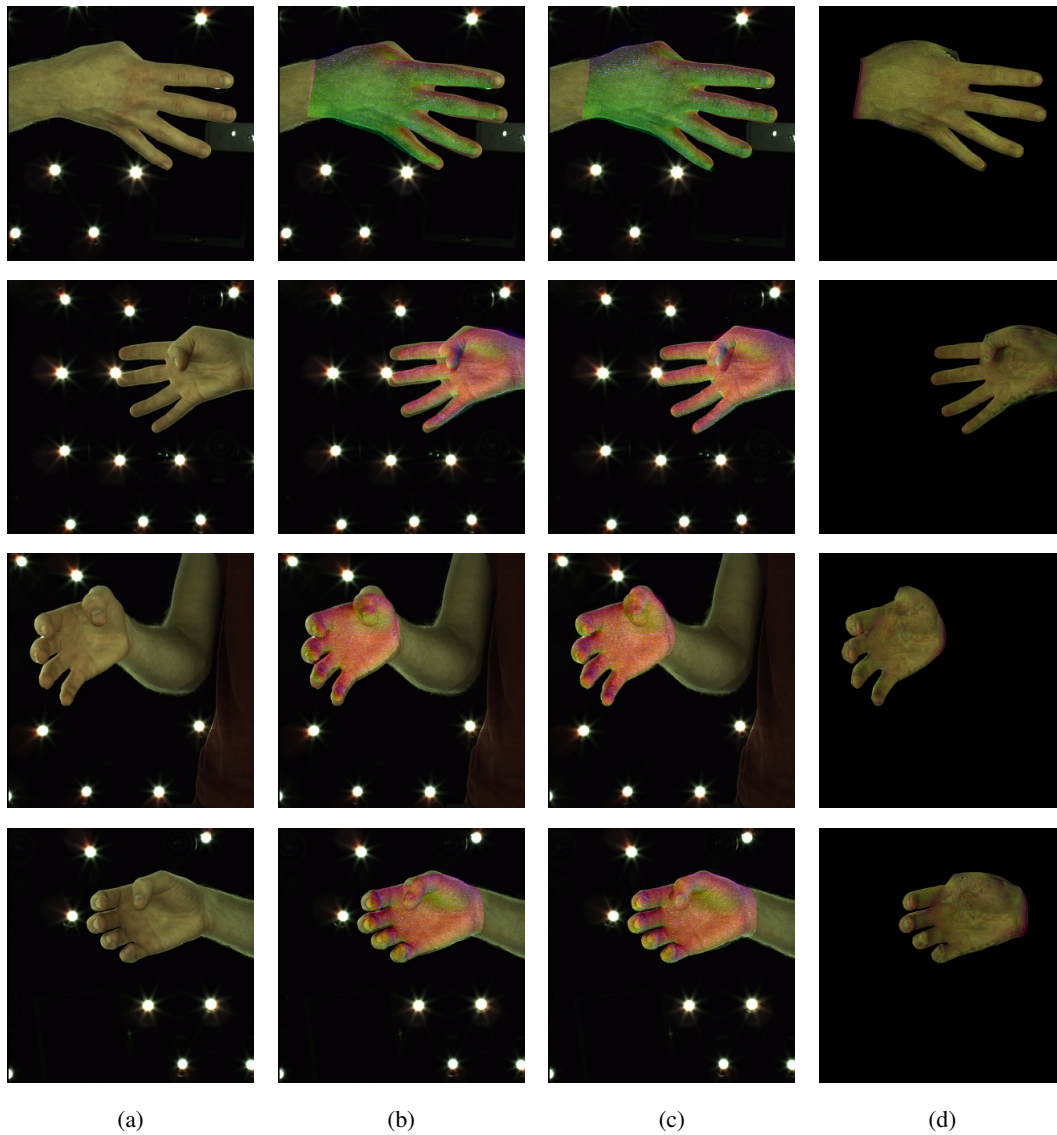
(a)   (b)   (c)   (d)

Figure 3: Four sequence: The columns are similar to Fig. 1. It is evident that DMVR is capable of taking into account shadows through ray tracing.
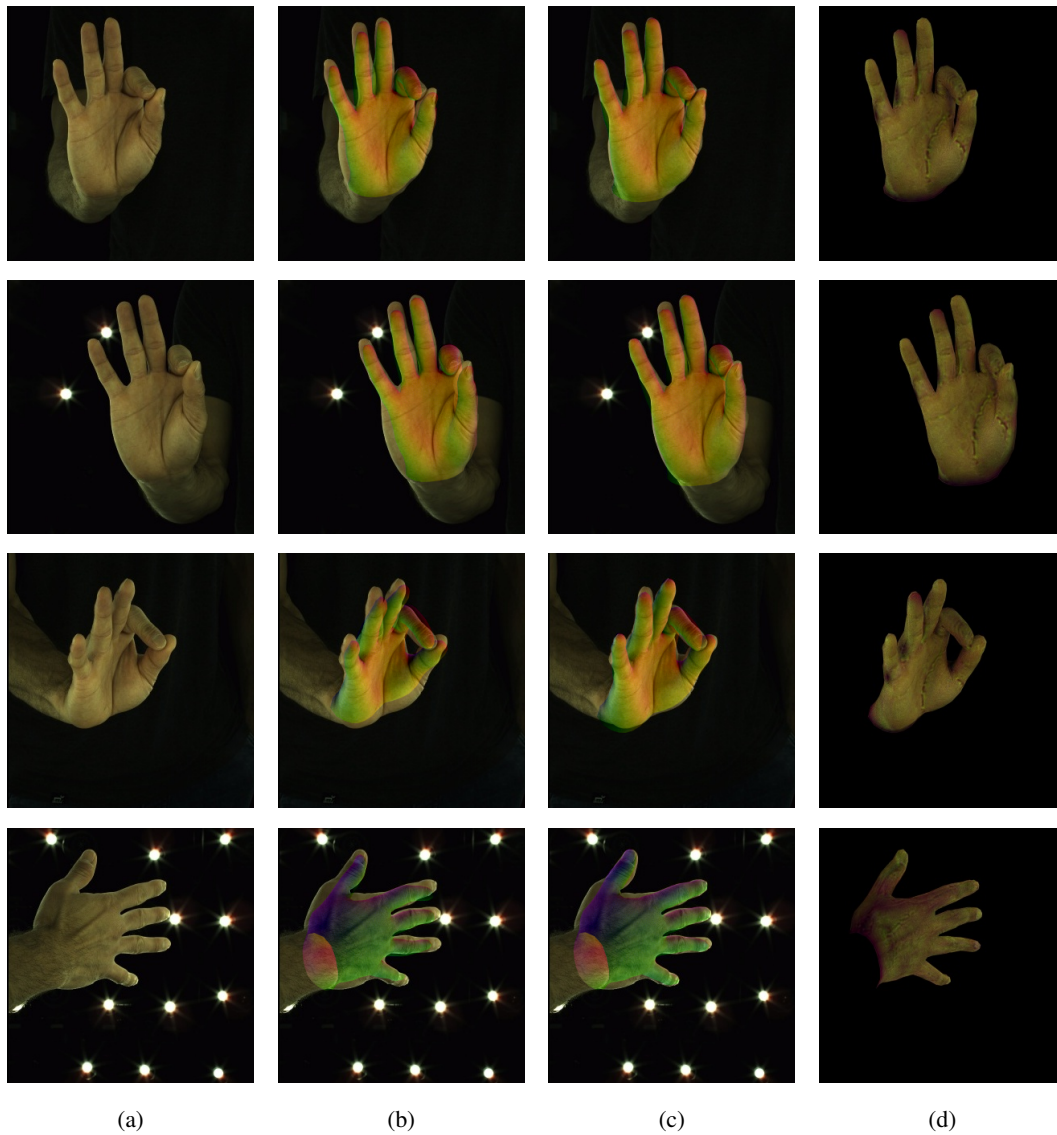
| (a) | (b) | (c) | (d) |

Figure 4: Okay sequence: The columns are similar to Fig. 1. In this figure, it is demonstrated that DMVR is capable of accurately reconstructing the geometry of a hand even when some of the fingers are in contact with each other.