

# Lightweight Photometric Stereo for Facial Details Recovery (Supplementary Material)

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## 1. Test on “In-The-Wild” Images

In this paper, we focus on high-quality 3D face reconstruction from face images captured with near-field point light source. Although our proposed method is not intended for “in-the-wild” images, we also test our method on such images and compare with Pix2vertex [36] and Extreme3D [41]. Fig. 1 demonstrates that our method achieves reasonable results on such images. It is possibly due to our proxy estimation network that utilizes facial shape priors to generate a 3D face model.

## 2. Results with Different Inputs

**Three Images Input vs. Single Image Input.** Our method can reconstruct face shapes from arbitrary number of face image inputs. In Fig. 2 and Fig. 3, we show reconstruction results of all the 12 subjects in our set (seven from the real set and five from the Light Stage) with three input images and a single image respectively. The results show that our method can recover fine facial details from both settings of inputs, and better accurate reconstruction results can be achieved from three input images due to the richer information provided by more inputs.

**Arbitrary Images Input.** In the paper we quantitatively show the results with arbitrary inputs of our proposed method. More results on our test set with arbitrary inputs are shown in Fig. 4. It can be observed that more input images lead to more accurate results.

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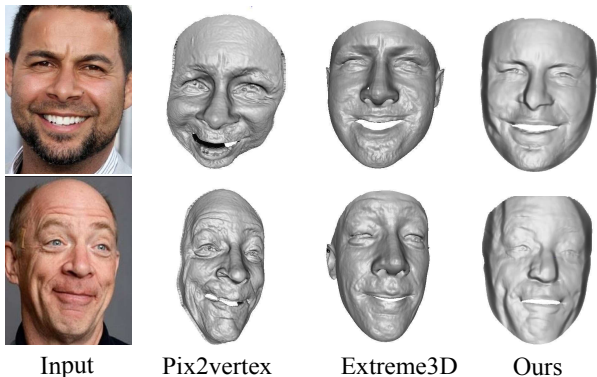


Figure 1. Qualitative comparison among Pix2vertex [36], Extreme3D [41] and our method on “in-the-wild” images.

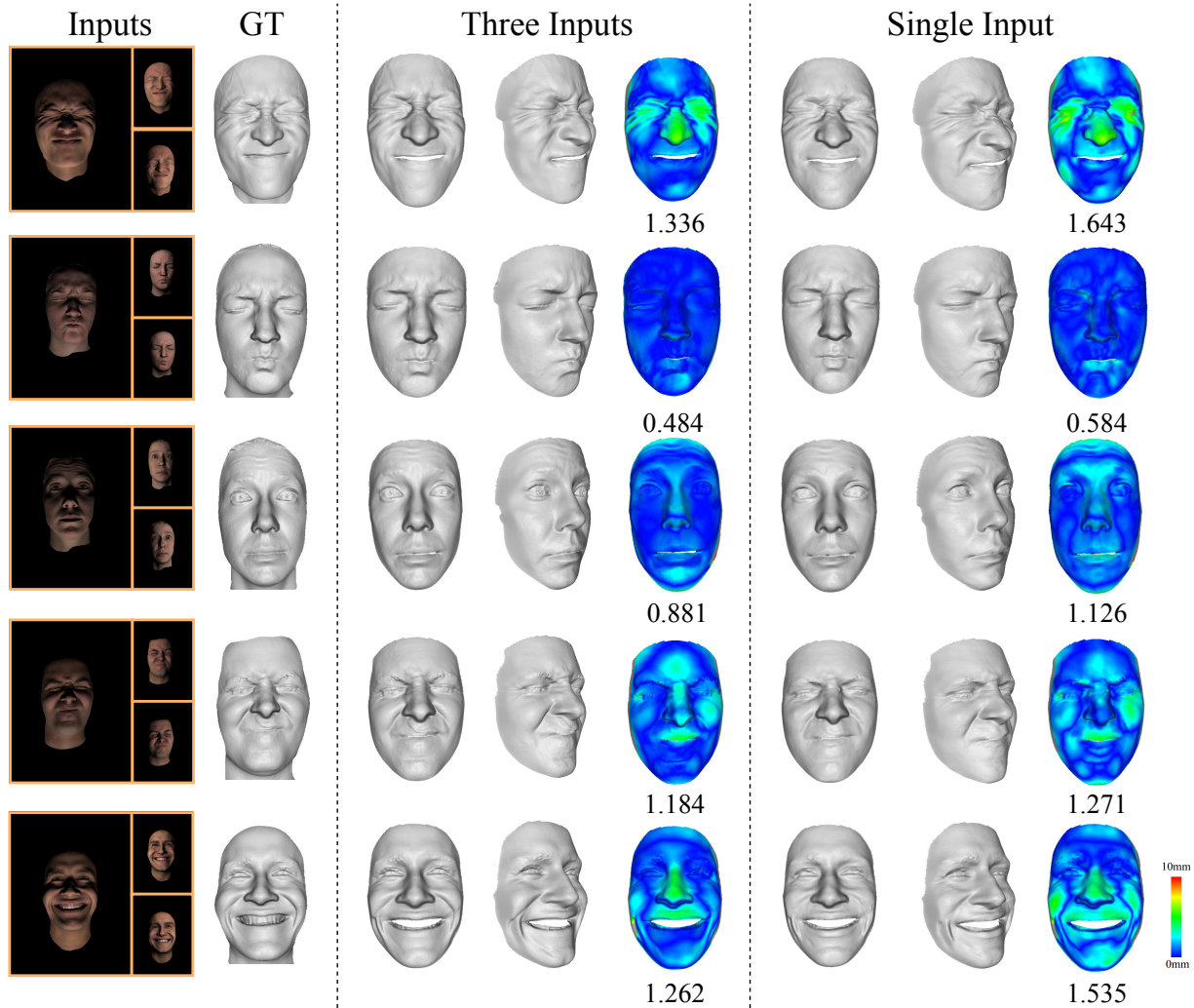


Figure 2. Reconstruction results on the Light Stage. Given the images as shown in the left, we show the reconstruction result under frontal view and side view. The corresponding error map and the geometric error of each reconstruction result are also given. The leftmost image in each row is the single image input.

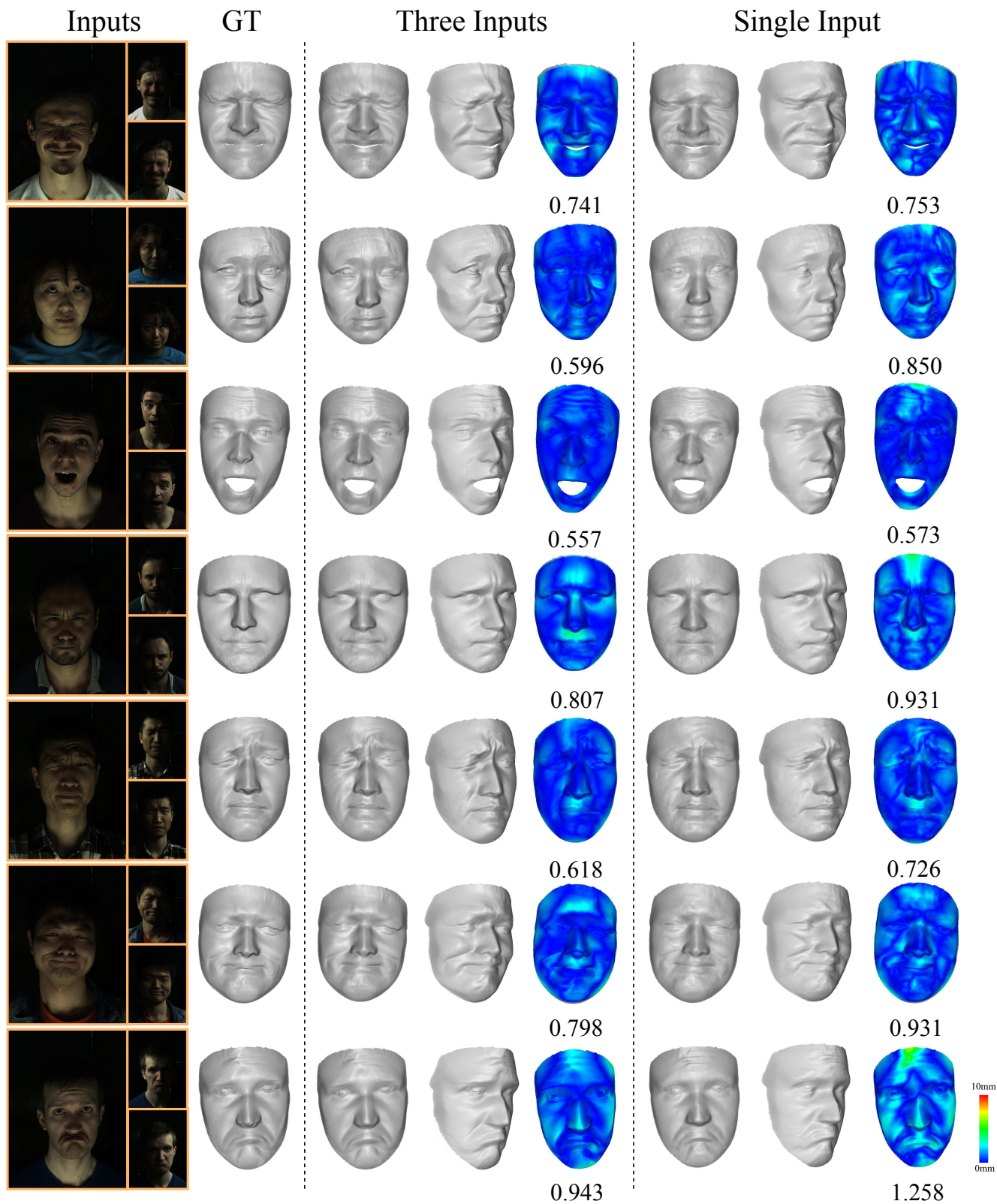


Figure 3. Reconstruction results on the real test set. Given the images as shown in the left, we show the reconstruction result under frontal view and side view. The corresponding error map and the geometric error of each reconstruction result are also given. The leftmost image in each row is the single image input.

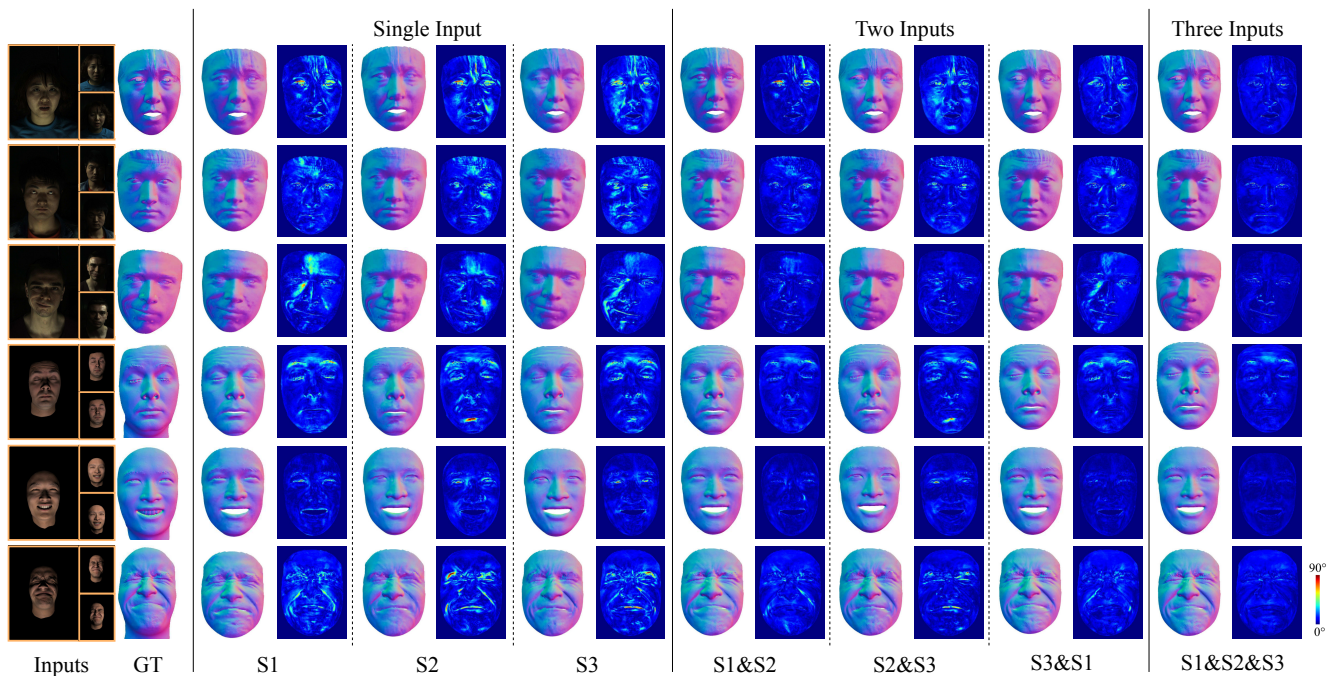


Figure 4. Estimated normal maps. For each model we show normal maps and their corresponding error maps with different kinds of inputs.  $S1$ ,  $S2$ ,  $S3$  represent the leftmost, the upper-right corner and the lower-right corner image respectively.