

Multi-View Pixel2Mesh++: 3D Reconstruction via Pixel2Mesh with more Images

Supplementary Material

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I. Overview

This document provides more information and results about MVP2M++.

Section II is a description of attached files './Result/xx...'

Section III provides more information on the structure of MVP2M_{v1,v2}.

Section IV provides more comparative experimental results.

II. File description

We provide OBJ files generated in Section "Experiment" in main paper in the 'Result' catalog, you can find the corresponding results in it. And we open and render these OBJ files with MeshLab.

TABLE I
The correspondence between the experiment and catalogue in 'Result'.

Catalogue	Comparison	Ablation	View	Parametric	Pooling
Experiment	Comparison to 3D Shape Generation	Ablation Study	Number of Views	Parametric analysis	Pooling Method

III. Models Proposed

For our model – MVP2M++ (Multi-View Pixel2Mesh Plus Plus), we propose three versions MVP2M++_{v1,v2,v3} and introduce the v3 in main paper. Below we will introduce the v1 and v2 which are involved in Section "Experiment".

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A. The structure of MVP2M++_{v1}

Figure 1 shows the structure of MVP2M++_{v1}. For brevity, we omit the image feature processing module including the CNN branch and the convlstm layer, only show its deformation branch.

As it shows, MVP2M++_{v1} can make use of multiple images to generate shapes and have three mesh blocks. In our experiment, we agree the number of input is 3 and only use the last image feature Img_3 to guide the shape deformation. For more information on Img_j , we have explained in Section "ConvLstm Layer" in main paper.

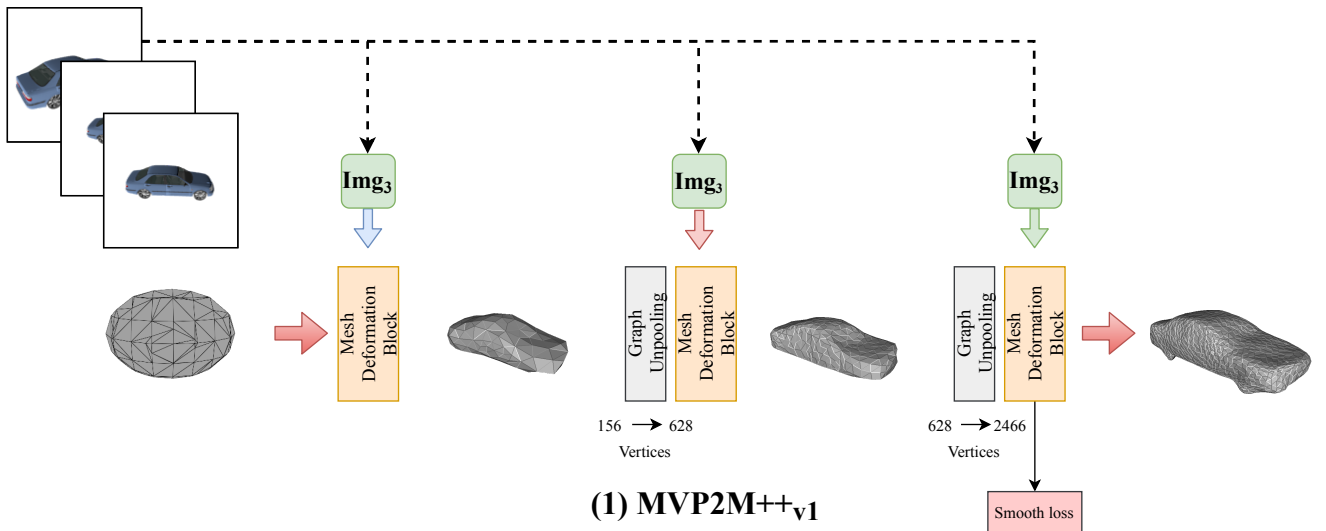


Fig. 1. MVP2M++_{v1} is almost the same as P2M. We only add the convlstm layer and Smooth loss function to P2M. When the number of mesh vertex reaches 2466, We will calculate Smooth loss.

B. The structure of MVP2M++_{v2}

For brevity, we omit the image feature processing module in Figure 2. To speed up the model, we reduce the number of graph pooling layer, graph unpooling layer and mesh block to 1,3,5 respectively, based on the structure of v3. This destroys the use strategy of Img_j , so we then remove the convlstm layer and use C_i instead of Img_j to guide the shape deformation, as shown in figure.

In our experiment, we agree the number of input is 3 and use the images' feature $\{C_1, C_2, C_3, C_4\}$. For more information on C_i , we have explained in Section "MVP2M++_{v2}" in main paper.

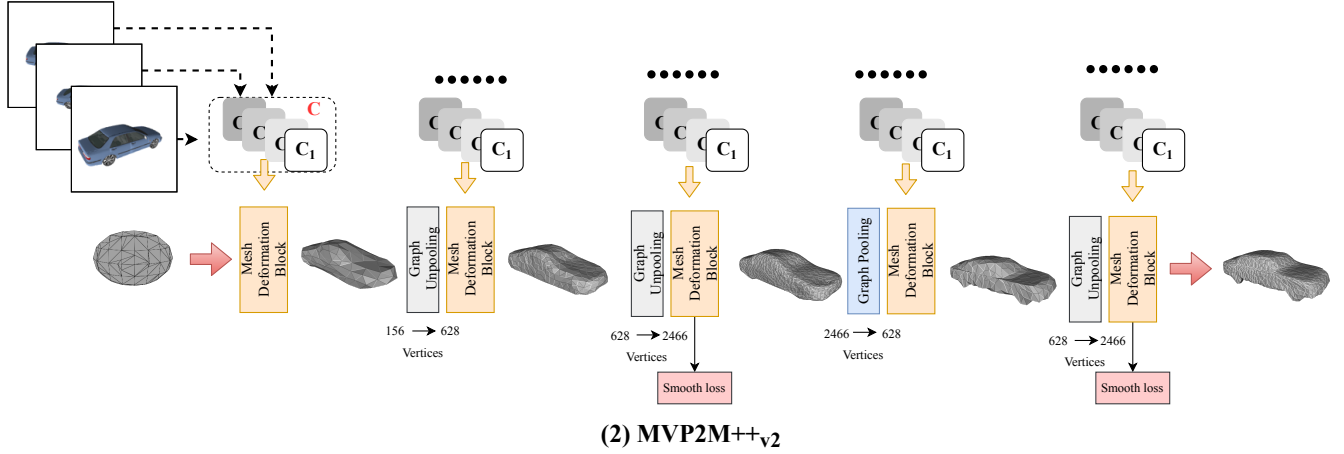


Fig. 2. MVP2M++_{v2} is a simplified version of MVP2M++_{v3}, we remove the convlstm layer and reduce the number of certain layers based on the structure of v3. As shown in figure, compared with the number of graph pooling layer (2), graph unpooling layer (4), and mesh block (7) in v3, the number in v2 is only 1, 3, and 5.

C. Some Results

For the reconstruction process of MVP2M++_{v1,v2}, we show some results in Figure 3.

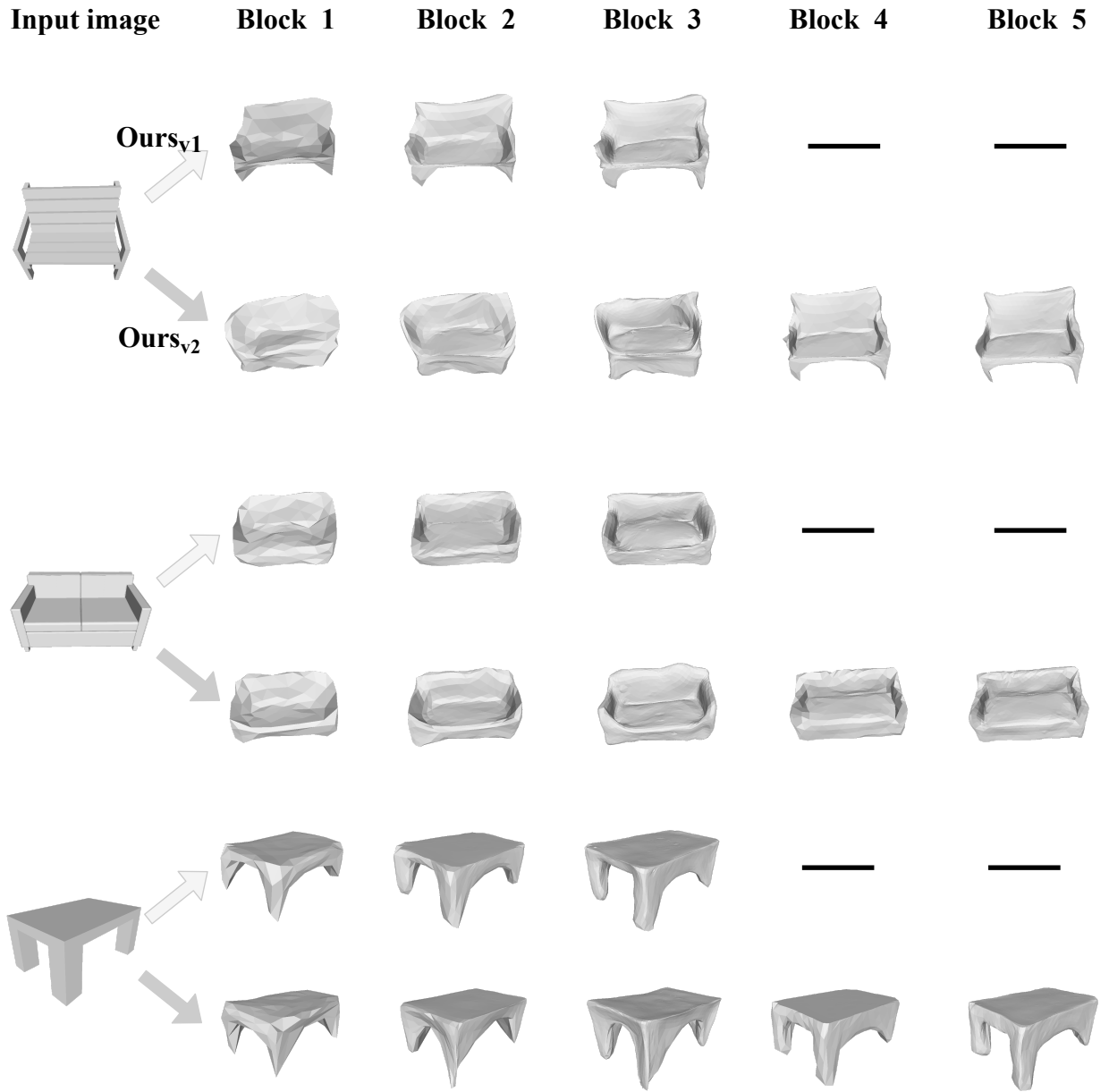


Fig. 3. Sample examples showing the output after each mesh block. Top is v1 and bottom is v2 in each sample.

IV. More results

More experimental results are shown in Figure 4.

