Towards More Stable Human Pose Estimation with Cross-View Attention and Foot Stabilization
Supplementary File

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Section 1 illustrates more details about the RKTD. More comparisons and qualitative results are presented in Section 2.

1. Difference between KTD and RKTD

Figure 1. Difference between KTD and RKTD. The root node (blue nodes) in KTD is the pelvis, while the root node in our proposed RKTD is determined by the contact state, leading to a reversible kinematic tree (blue lines).

We further illustrate the difference between KTD and our proposed RKTD in Figure 1. KTD has a fixed kinematic tree, whose root node is the pelvis, while our proposed RKTD determine the root node by the contact states divided into three cases:

\[ n_{\text{root}} = \begin{cases} 
n_l & \text{if } c_l > c_r > 0, 
n_r & \text{if } c_r > c_l > 0, 
n_p & \text{otherwise,} 
\end{cases} \]  

(1)

where \( n_{\text{root}}, n_l, n_r \) and \( n_p \) represents the root, the left foot, right foot and pelvis node separately. We then estimate each pose following the order in the corresponding kinematic tree, which takes the poses of the ancestor nodes into consideration.

2. More results

Table 1 is a comparison of the inference speed of our models and other works on a single NVIDIA A100 GPU with 1 batch size, which shows that our model not only achieves state-of-the-art accuracy, but also has good inference speed.

<table>
<thead>
<tr>
<th>Method</th>
<th>3DPW-MPJPE</th>
<th>3DPW-PA-MPJPE</th>
<th>Batch 1 FPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAED [2]</td>
<td>79.1</td>
<td>45.7</td>
<td>39</td>
</tr>
<tr>
<td>CLIFF [1]</td>
<td>69.0</td>
<td>43.0</td>
<td>22</td>
</tr>
<tr>
<td>Ours-Base</td>
<td>77.8</td>
<td>44.7</td>
<td>77</td>
</tr>
<tr>
<td>Ours-Large</td>
<td>70.8</td>
<td>40.1</td>
<td>46</td>
</tr>
</tbody>
</table>

Table 1. Comparison of the inference speed of our model with previous works.

Table 2 presents the accuracy of our model in contact prediction. Both our base model and the large model achieve very high precision and recall, with the F1 score above 0.90.

<table>
<thead>
<tr>
<th>Method</th>
<th>AIST++ Precision</th>
<th>AIST++ Recall</th>
<th>AIST++ F1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ours-Base</td>
<td>0.87</td>
<td>0.95</td>
<td>0.91</td>
</tr>
<tr>
<td>Ours-Large</td>
<td>0.89</td>
<td>0.96</td>
<td>0.92</td>
</tr>
</tbody>
</table>

Table 2. Foot-contact prediction accuracy for our model.

More qualitative results about the foot pose reconstruction and our method are shown in Figure 2.

References

Figure 2. Qualitative results on AIST++ test set. From left to right: input image, tri-view 2D joints, tri-view 3D mesh (green for the ground truth and red for prediction). Additionally, the results about the foot pose reconstruction are reflected in the tri-view ground truth 2D joints.