Learning to See Through Obstructions
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Introduction

Background
Window
Foreground
Motion parallax

Results of a real-world scene

Approach

Initial flow decomposition CNN
Align and average
PWC-Net
Layer reconstruction CNN
PWC-Net
Layer reconstruction CNN

Online optimization

Background prediction
Reflection prediction

Experiments

Quantitative evaluation on controlled sequences

<table>
<thead>
<tr>
<th>Method</th>
<th>Stone</th>
<th>Toy</th>
<th>Human</th>
</tr>
</thead>
<tbody>
<tr>
<td>Li and Brown</td>
<td>0.927</td>
<td>0.242</td>
<td>0.790</td>
</tr>
<tr>
<td>Guo et al.</td>
<td>0.725</td>
<td>0.101</td>
<td>0.770</td>
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<tr>
<td>Xue et al.</td>
<td>0.973</td>
<td>0.843</td>
<td>0.898</td>
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<tr>
<td>Alayrac et al.</td>
<td>0.936</td>
<td>0.163</td>
<td>0.798</td>
</tr>
<tr>
<td>Ours</td>
<td>0.966</td>
<td>0.700</td>
<td>0.948</td>
</tr>
</tbody>
</table>

Input (top frame)
Recovered background
Recovered obstruction

Stone
NCC = 0.960
NCC = 0.700

Toy
NCC = 0.948
NCC = 0.870

Visual comparison on natural sequences

More results can be found in our project website!