Per-joint impostors achieve high performance when rendering thousands of agents, while still allowing us to blend animation. This provides interactively animated crowds and reduces the memory footprint compared to classic impostors. In this poster we exploit the potential of per joint impostors to further increase both visual quality and performance. The CAVAST framework for crowd simulation and rendering has been used to quantitatively evaluate our improvements with the profiling tools that it provides. Since different applications will have different needs in terms of performance vs. visual quality, we have extended CAVAST with a new user interface to ease this process.

CAVAST
Modular architecture for simulation animation and rendering of crowds in real-time. https://sites.google.com/site/cavastproject

Results:
Perceptual studies to evaluate at what distance artifacts appear for each type of impostor: classic (billboards), relief or flat

Time and distance for which each impostor type was detected, and the percentage of errors made by participants:

<table>
<thead>
<tr>
<th>Impostor type</th>
<th>Classic</th>
<th>Flat</th>
<th>Relief</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean time (s)</td>
<td>10.5</td>
<td>21.1</td>
<td>23.9</td>
</tr>
<tr>
<td>Mean distance</td>
<td>15.5</td>
<td>10.7</td>
<td>8.9</td>
</tr>
<tr>
<td>Miss %</td>
<td>6%</td>
<td>9%</td>
<td>15%</td>
</tr>
</tbody>
</table>

Experiments: 22 participants (16 males and 6 females). Resolution of 1920*1080 pixels. Distance user – screen: 60 cm. Each user watched 36 videos in random order (2views*3impostor_type*2videos_impostor*3repetitions)

CAVAST: The crowd animation, visualization, and simulation testbed


