Exploring Software Cities in Virtual Reality

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Often difficult for users to navigate in 3D spaces [TC09]

Virtual Reality (VR) can employ the natural perception of spatial locality of users [EPP15, DSK14]
Often difficult for users to navigate in 3D spaces [TC09]

Virtual Reality (VR) can employ the natural perception of spatial locality of users [EPP15, DSK14]

→ Immersive VR approach for exploring software cities with a head-mounted display and gesture-based interaction
Setup

Virtual Reality Approach
Gestures – Translation

Virtual Reality Approach
Gestures – Rotation

Virtual Reality Approach
Gestures – Zoom

Virtual Reality Approach
Gestures – Select and Reset

Virtual Reality Approach

- Point and Select: Close and open the right hand

- Reset: Jump
### Table 1: Debriefing Questionnaire Results for our Interview (higher is better)

<table>
<thead>
<tr>
<th>Feature</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>VR for program comprehension</td>
<td>64 %</td>
</tr>
<tr>
<td>Alternative to classic monitors</td>
<td>50 %</td>
</tr>
<tr>
<td><strong>Favor of Gestures</strong></td>
<td></td>
</tr>
<tr>
<td>Translation</td>
<td>68 %</td>
</tr>
<tr>
<td>Rotation</td>
<td>66 %</td>
</tr>
<tr>
<td>Zoom</td>
<td>36 %</td>
</tr>
<tr>
<td>Selection</td>
<td>66 %</td>
</tr>
</tbody>
</table>
Related Work

- Imsovision [MLM01] represents object-oriented software in a VR environment
- SykscrapAR [SSMM12] using augmented reality with a platform
Conclusions

- VR approach to explore the 3D city metaphor
- Open source\(^1\) and replication package\(^2\) provided

Future Work:

- Other head-mounted displays and input sensors
- Brain user interfaces
- Other visualizations
- Controlled experiments

\(^1\)http://www.explorviz.net
\(^2\)http://dx.doi.org/10.5281/zenodo.23168


