Visualisation and Exploration of Linked Data Using Virtual Reality - a preview of Graph2VR

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Abstract
We have reviewed existing solutions and created a prototype, Graph2VR, to work with graphs in Virtual Reality based on SPARQL queries, with the aim to help scientific applications such as cohort data harmonisation or rare disease human phenotype ontology navigation.

Keywords
Linked Data Visualisation, RDF Visualisation, Virtual Reality, Graph exploration, SPARQL, DotNetRDF

1. Introduction

Linked Data is a best practice method to share and reuse data, in particular complex knowledge graphs. Visual processing of information and structures in large graphs comes naturally to people, and so development of tools for the visualisation of Linked Data has become a field of research interest in recent years. Graph2VR is an explorative study on how visualization of Linked Data in Virtual Reality as 3D graphs might change/improve the way the user can interact with semantic data graphs.

2. Results

We have surveyed existing semantic web and VR visualisation tools. We have implemented a working prototype that enables semantic graph navigation. And we did a survey where 34 human test subjects used the prototype to explore semantic data graphs using VR. Figure 1 shows a screenshot of Graph2VR after a SPARQL query was executed. The natural virtual environment offers another dimension and therefore more space to visualize graphs.
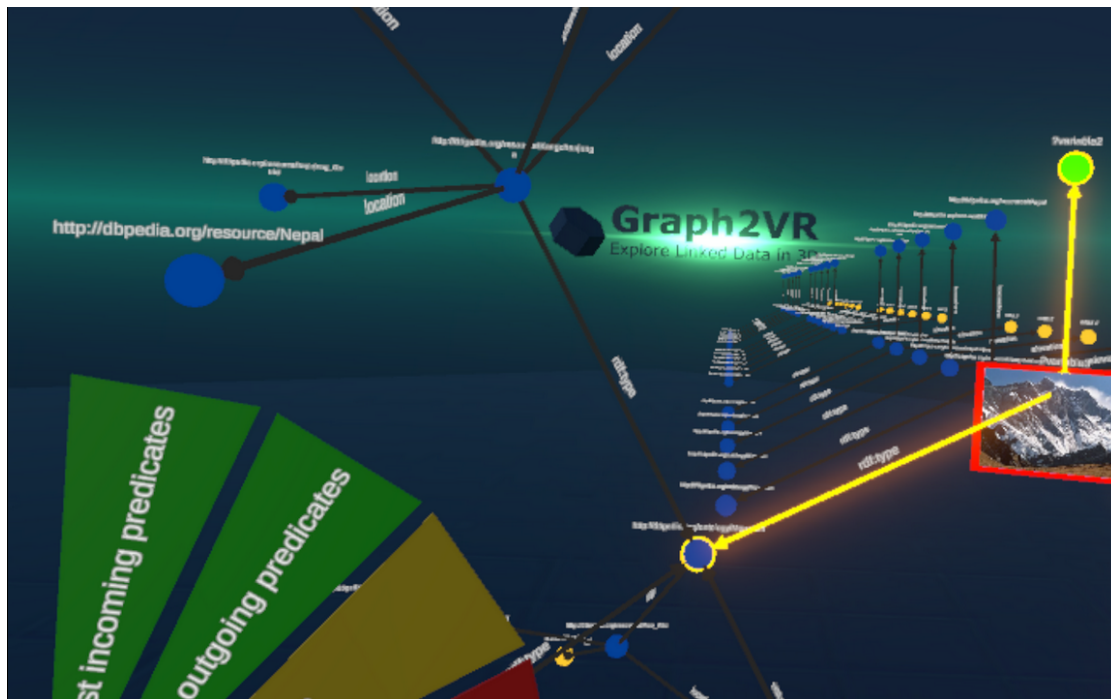
Figure 1: Screenshot of Graph2VR.

3. Future works

Graph2VR is currently undergoing final evaluation and user testing in order to quantify the usability of the software, awaiting write-up of the results in a full research paper. At publication, the Graph2VR prototype software will be made open source.

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