Level 4 Project Progress Report

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Project Description

The project, “Visualising Huge Networks in a Browser”, is about researching and implementing some way for networks of hundreds of thousands of nodes and millions of edges to be viewed by a client in a browser. This involves challenges such as getting over the issues such as bandwidth, processing power and memory for machines running on a network, along with the difficulty of actually visualising the network after it is rendered.

Progress

So far, progress made has included doing background reading and literature review into different ways people approach visualising information in a browser, visualising networks and visualising huge networks, and also looking into different pieces of software that existed that did network visualisation.

After this, a list of graphing software was made that was perceived to be worth looking into further. The goal of reviewing this software was to both gain a fuller understanding of how software visualised networks, and to select a few pieces of software from the list to do further research into and analyse more closely. A criteria and process was written up about how to evaluate the software, and then each piece of software was compared against the criteria and evaluated.

However, despite several problems throughout the software review (explained further down), there were both several different pieces of software that were tested successfully, and also, by the end of the review a far better understanding of network visualisation had been gained.

Plan

The goal of the experiment was not fully met as a list of software to be more closely analysed could not be made due to the fact the software was not as expected. As a result, a decision had to be made as to how to proceed. After discussing options, the goal of the project was changed to porting Tulip, which is native graph visualisation software, to work as a web application.

From mid-December until the start of Semester 2, I am planning on looking into how to port piece of native software into a web app, and also formally write up all of the work I have done so far and make the writing final dissertation worthy.

After the semester starts, I will have a plan of how much of the software can be feasibly ported in the time provided, with several additional elements that can be added in or taken

away depending on time constraints. I will then start implementing the web port and by the end of February I aim to have that finished.

For the last month of the project, I will make sure the web port is fully functional and allows importing and exporting of data in order to allow third parties to use the software easily, and also do rigorous performance testing on a variety of data samples, from a few hundred nodes to a few hundred thousand.

Problems

The first experiment was more difficult than expected for a few reasons. The software often required root permissions which meant work could not be done in university and even when installing the software on another machine, other problems surfaced such as the software performing very badly on a virtual machine. On top of this, several different pieces of software were not fit for purpose, whether because they were a project as opposed to a fully-fledged software suite that was actively maintained and never left beta, or because the software focused on graph manipulation as opposed to graph visualisation. This made it difficult to compare much of the software to the criteria created.