- Interactive Systems 3 -
Practical 2: Home Page Development and Design

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1 Introduction

In this week's practical you will perform a static analysis of the navigation structure of a web site. You will be introduced to some of the metrics proposed by Thimbleby but you are free to devise your own providing they are based on graph theoretic ideas. In other words, the technique should view web sites as composed of nodes that represent pages and vertices that represent links between those pages. Discuss this with me during the practical session if you are in any doubt about what this implies.

2 What Do I Do Now?

This section briefly summarises your task for this week's practical component of IS3. You should complete these tasks working in the same teams that you have been assigned for the level 3 team projects. If this causes anyone any problems then please see me as soon as possible. These teams will also be used for the first part of the IS3 assessed exercise.

2.1 Read More About Thimbleby's Metrics

Thimbleby and others have applied a number of graph theoretic techniques to provide measures that reflect the navigational structure of a web site. You can read about some of these approaches on:

> http://ijhcs.open.ac.uk/thimbleby/thimbleby-nf.html

For example, we might specify that it should take no more than 2 clicks to reach any page on the site from any other page on the site. In this case, we would like to know the minimum number of steps to go between each pair of pages on the site, or nodes in the graph. We must then check that no pair requires more than 2 steps. In other words, that the longest path is composed of two vertices.

Alternatively, we might specify that users should follow a linear progression from one page to the next if the information resource contains procedural instructions. This would be appropriate if, for example, users were accessing the web site to install complex application software. They should not be encouraged to jump between steps of the installation if there is a risk that necessary tasks will be forgotten or deliberately ignored. In this case, we might check that there is a maximum of two links between each page, or vertices between nodes, in that particular area of the web site. One vertex would lead to the next page and another might lead back to the previous page.

2.2 Apply Thimbleby's Metrics

Once you are familiar with Thimbleby's measures, your next task is to apply at least TWO of the metrics to ONE of the following web sites.

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http://www.roads.dft.gov.uk
http://www.disney.co.uk
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As always, it is important to remember that these sites are intended to support very different tasks for very different user groups. Different sections of the same web site will also be devoted to different user groups. These distinctions affect the navigation structures within the web site.

Sanity check: these web sites are extremely large and are highly connected. You should begin by applying one of Thimbleby's metrics to only a VERY small portion of the entire site. Alternatively, you may find it easier to use some of the code that is available for graph analysis via the web. For example, Harold Thimbleby's web pages provide Java implementations of various Postman algorithms:

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http://www.uclic.ucl.ac.uk/usr/harold/
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If you choose to use existing code then remember that the purpose of this exercise is to apply the metrics and not to gain installation expertise. There are further papers on Thimbleby's techniques from the previous URL.

2.3 Briefly Document Your Findings

This exercise is not degree assessed. However, it may help with your assessed exercise if you write a one-page summary answering the following questions:

- A series of questions can be asked about the usability of the technique as a means of engineering interactive web sites. How easy was it to apply the metric? What is the maximum size that can be analysed using manual techniques? Is there a minimum useful size? If a software tool is used then how often would it need to be run?

- how do we interpret the numbers? It can be difficult to interpret the numbers that are derived from many of the proposed techniques. For example, the sum of the distance from any node to every other page might be calculated in terms of the number of links that must be traversed. It can be argued that a high number might indicate that it is very difficult to navigate from that page to other pages on the site. This number would of course rise as the total number of pages on the site increases. However, designers may deliberately distance some pages from other areas of a site that are intended for a different user group. In this case the number returned for this metric would indicate a potential usability problem even though a potentially useful innovation had been introduced.

- are the metrics capturing everything? Do you think that these metrics provide any useful information about the navigational structure of a web site? How do they relate to some of the concepts of 'deep linking' that have been introduced to help users who access web pages through search engines? If you are unfamilliar with the concept of deep linking do a web search on http://www.useit.com.

Email me if you would like to discuss your answers to these questions and I will try to schedule time in one of the following practical sessions.

3 After the Practical

By the end of this practical you should have experience of representing and analysing the structure of a web site in terms of graph theoretic concepts. You should also have some insight into the strengths and weaknesses of this approach.