

Web Information Systems

Assignment 1: Concepts of web engineering with focus on hypermedia/navigation design

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I will start with papers looking at the problems in web engineering from higher perspective and then continue with papers describing solutions for concrete problems.

First paper [1] focuses on the problem of managing big web information systems. It has pretty long introduction describing why we need engineering approach for this problem. I believe that the really nice characterization of designer's personal development is shown. Unfortunately this development takes too much time and that is what engineering approach can improve. Whole paper is looking at the problem from high perspective. Most of the paper concerns planning and managing the project and creating *process* and *product models*. There is also big part about web design. I was glad that there is a part about maintenance which I find very important in web development. I like that the paper emphasize a lot on the typical differences of web information systems as permanent change of content and growth of the requirements.

Second paper [2] is focused mainly on the navigation treatment. I consider this paper to be the best of all the five papers which I have read. It is also the longest one. Authors give us an overview of 15 web engineering methodologies. Every methodology is transparently described and the activity diagram of whole life cycle is given. Comparison of treatment of navigation between methodologies is proposed. Authors usually point out differences like various models or approaches to design the navigation in divers phases of project life cycle. Unfortunately description of navigation treatment is pretty high level and reader must look for other sources to be able to imagine concrete usage. I like the systematic approach of this paper. I found graph of relations between different proposals very interesting. Then there is a table wich describes in which phases of the life cycle the navigation is treated. Well arranged overview of the most used techniques as use cases or navigational patterns is shown.

I find this paper very useful as transparent overview of the most known and referenced web engineering methodologies. Unfortunately there is not enough space to describe every methodology in detail but still it gives pretty good summary. I like that the authors emphasis on practical use of these methodologies which means they mentioned how important it is to have some sort of tools for modelling and so on. I think it is good thing that authors stress a community to create more unified terminology because sometimes different terms refer to same objects.

The use of navigational patterns was mentioned in the second paper. Patterns are closer to implementation so it is easier to immediately see impacts. I found a paper concerning only navigational patterns [3]. It deals with design patterns for hypermedia navigation. Four design patterns are described by problem – solution approach. Known uses of particular pattern are usually mentioned. Authors made a case study of navigation in popular electronic shop: *Amazon.com*. They looked at use of described design patterns and were trying to find improvements for the shop. Unfortunately this paper is old (1999) which means that the pages of the store look little bit different now. Even though it is possible to find improvements which

could be useful even now. In my opinion concretely intra-set navigation operations could be improved by *Set Based Navigation* pattern.

Most of the patterns are commonly used. Probably most of the developers can imagine concrete problems behind them but I think that it is important to have terminology for the recurrent problems appearing in almost every WIS. Design patterns are widely used in object oriented programming and I suppose it would help a lot even in web engineering. *OOHDM* and other methodologies bring few design patterns too. I believe that design patterns can help designers to communicate and exchange experience effectively in more unified manner.

After reading the first paper about navigational patterns, I started to be more curious about this theme. I found other paper [4] describing two design patterns for (adaptive) hypermedia/web applications. Both of them consider navigational structure of the application.

First pattern is called *related child pattern*. It should help user in intra-set orientation. I found this pattern to be very similar to *navigational context pattern* described in previous paper respectively in the example of improving *Amazon.com* with intra-set navigation. I see only one difference: *related child pattern* offers user only links to previous or next child but *navigational context pattern* offers user a collection of nodes. I suppose that the *related child pattern* is only specialized form of the *navigational context pattern*. I believe this is unfortunate because terminology increases without adequate advantage.

Next pattern is *direct path pattern*. Following this pattern means providing the user with direct link whenever the direct path has been followed by majority of users. I think this is really useful pattern which is or could be used by many applications. Decision about adding the direct link could be done with help of access logs.

The last paper [5] is addressing most concrete application. The paper describes possibilities of query-based navigation in semantically indexed space. A lot of knowledge from information retrieval area is used. Authors show us advantages of this approach in social history museum application. I think that the paper describes pretty well difference between standard browsing and query-based navigation and possibility of implementing this kind of navigation into application which uses semantically indexed information. Authors describe semantic relations in form of object, relation and subject. There are few kinds of relations like “a kind of” or “next to”. The application have 3 dimensions of query restriction: time, position and semantical closeness of the term.

I think this approach can be very useful especially in education because it offer user to browse through the information with respect of semantical closeness. System can work with generalization resulting in proposing similar or closely related information. I think this kind of navigation could be used more. Maybe it could use geographical information systems to obtain spatial index data.

References

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or <http://www8.org/w8-papers/5b-hypertext-media/improving/improving.html> – with bigger images)

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