

7 CONCLUSION

In this thesis we have explored means for assisting an author on the way towards a domain model for an adaptive hypertext system. After identifying the main goal of this thesis and exploring related research from the field of adaptivity, we proposed an overall architecture for an AHS and then zeroed in on techniques for achieving a domain model. More specifically, we found that the tags play an important role regarding content of the documents, leading to Heuristics which secure the extraction of concepts and the identification of relations among the concepts selected. After implementing the conceptualizer module of the system, we briefly sketched how easily relatively powerful adaptive presentations and variations of adaptivity can be realised, facilitated by the use of the `PROLOG` language.

When hiking on the future trip towards adaptive systems, we believe the first hill to climb is that of convincing authors that making an adaptive system is actually manageable. From the author's point of view, the effort should not be put into redesigning existing documents, but rather in planning what sort of adaptive behaviour to use.

The main goal of this research was to design an adaptive hypertext system that could bridge user gap of knowledge in the context of a domain, developing methods that facilitated the use of existing HTML-documents. In order to achieve the desired flexibility, a domain model was needed. An analysis of some randomly picked documents led to the observation that the tags actually would help to sort out important keywords, leading to the hypothesis that the relative importance of the elements combined with some basic IR-techniques would yield positive results for the system. The rules that guided this process was based on Heuristics, which in turn were drawn up from the characteristics and patterns of a relatively small set of hypertext documents, along with our previous experience with HTML.

After implementing a prototype, an evaluation of the system in total revealed that some rules produced far too many relations. Moreover, one might assume that the methodology outlined in this thesis would not work equally well with all collections of documents. Still we believe that the idea of combining the results of rules and IR-techniques with more intelligent reasoning is fruitful, and that authors will benefit from our methods.

Finally, as a digression, how can an AHS based on our design be published online? The task should, theoretically, not be as complex as it might seem. Small scripts (e.g. written in `PHP`) can arrange for the layout in order to prepare the system for the Web. The plan is straightforward:

- The adaptive engine reasons on which knowledge sources are most appropriate to present and instructs the script with a list of the respective IDs (i.e. filenames) to be presented.
- The script in turn stitches together documents simply by including files from the knowledge base into a standard template HTML file.

The decision to use the combination of C and PROLOG was based on a wish for integrating the AHS routines into an existing agent based framework. Due to the ease for C to communicate with both PHP and OpenGL both generation of adaptive hypertext documents for the Internet today and interesting 2D or 3D visualizations of the domain model should be achievable using agents.

As mentioned several times throughout the thesis, more research and intensive testing is obviously needed in order to improve both the rules and some of the framework, and validate the system. In addition to an online implementation of the work of this thesis, the following are subject to future research:

- The development of an inference engine able to develop new rules to guide the conceptualization
- The embedding of other techniques for extracting information in order to increment the reliability of the system
- Applying better Heuristics for conceptualization that would fit a larger audience
- Test whether the development of various adaptive behaviours is indeed as simple and promising as predicted in this thesis.
- Justify the selection of the split between document concepts and element concepts, possibly trying other solutions.
- Embed techniques for visualization of the domain model and the user conceptual models, e.g. allowing users to navigate their own mental models in a three dimensional landscape.