IMPROVED INDEXING FOR DISTRIBUTED VIRTUAL UNIVERSITY

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Abstract *¾ Many disciplines have been changed through the use of the Internet. Education being among those that suffer the most radical changes. In the project "Virtual School of Energoprojekt Group" we made a prototype implementation with distributed mobile agents. The role of the mobile agent layer in the entire virtual university framework is to provide support for information retrieval from the Internet. Major enhancements of the proposed architecture of our solution involve traditional indexing which is enriched by inclusion of an extended thesaurus. This extended thesaurus is updated by mobile agents by finding useful content on accessible servers. On the servers not allowing access of mobile agents, standard search engines are used and the results of such standard search are analysed by software agents and added to the thesaurus.*

Index Terms ¾ Aglets, indexing, mobile agents, thesaurus.

INTRODUCTION

Internet technologies necessitate radical changes in the education process itself, and traditional learning models and our system of values in the education area must be re-evaluated to reflect the new reality of ubiquitous connectivity and universal information access.

One of the key problems related to access via the Internet is that of information overload. In the traditional paradigm, one of the problems that were most difficult to overcome, was that of lack of timely and complete information. In the Internet-based paradigm, on the contrary, a wealth of information is accessible – but it then becomes hard to filter out just how relevant and how accurate it is. Due to the inherent distribution of the Internet and the knowledge contained therein, the simultaneous requirements for completeness and timeliness automatically eliminate the use of a centralized search engine, no matter how powerful it may be. A promising way, then, to overcome this difficulty is through the use of distributed mobile agents.

SOFTWARE AGENTS AND THESAURUS

We made a prototype implementation for a system of distributed mobile agents within the corporate training center of Energoprojekt Group [1]. The corporate training center is organized around a virtual university framework, making full use of modern multimedia content creation and delivery mechanisms. Courses are available both internally (on the corporate intranet), and externally (via the Internet).

The role of the mobile agent layer in the entire virtual university framework is to provide support for information retrieval from the Internet. It is expected that timeliness and completeness of information available on the virtual university will be significantly improved through the use of such agents, and first results of laboratory and live tests are very encouraging. As the system to be described is still in the prototype phase, it is expected that the overall functionality of the system can be improved in many ways.

Web interface of the Virtual School of Energoprojekt Group makes accessible various multimedia contents: Virtual Notice Board, Digital Library, Web-based Courses, Video Broadcast, Video-on-demand.

Mobile agents access Web contents on concrete addresses internally (in corporate intranet) and externally on the global Internet. On the basis of feedback information, a special server records concrete URL addresses with HTML pages found on the basis of initially given criteria.

If indexing of Web server contents has been made, software agents will turn to the server with database containing indexes of HTML documents. Initial results have been achieved through the application of Aglet, and in further research we are going to practically test also other agent environments.

User requirements submitted to the Virtual School server initially are processed by an analysis of the previously generated thesaurus. The content of the thesaurus is updated on the basis of new information found by the agents in the meantime.

CONCLUSION

The proposed architecture of our solution provides three significant enhancements:

- Traditional indexing is enriched by inclusion of an extended thesaurus;
- This extended thesaurus is updated by mobile agents by finding useful content on accessible servers;
- In the meantime on the servers not allowing access of mobile agents, standard search engines are used and the results of such standard search are analysed by software agents and added to the thesaurus.

REFERENCES

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