AN INTELLIGENT WEB BROWSER FOR INTERNET/ELECTRONIC COMMERCE

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Introduction

During the emergence of Internet technology in recent years, it is obvious that Electronic Commerce has rapidly become one of the most prominent applications in this field. As the first generation Internet technology mainly focused on the content providing, e.g., news, art, et. al. The browser and search engine provides a readily available tool for users to surf the Web and to locate their subject of interest according to their individual needs and requirement. The Electronic Commerce however introduces significantly different and more stringent functional requirements for the Internet technology such as real time transaction processing, and traffic management, encryption secured data transmission, et. al.

What Electronic Commerce has further brought about is the fundamental change of business behavior from what human have long been acquainted with in a traditional physical commerce system to a new computerized Web agent based client server system model. Such change of business behaviors will make significant impact on the business management philosophies of supply, demand, pricing, promotion, shopping, research, decision making, buying, and after-service.

Accordingly, in addition to the traditional technical issues such as traffic management, transaction processing, et. al. we have embarked on multiple research projects in order to understand the impact of these business behavior, and to further explore the technological solution so that, in the future, intelligent systems would be able to computerize and to dynamically manage such business behavior for the Electronic Commerce.

Research Methodology

As transmission bandwidth is limited in Internet, and will be significantly reduced when the network traffic becomes congested. Therefore, the optimization and management of hyperlink as well as the utilization of the multimedia object becomes particularly important. It is foreseeable that Electronic Commerce would requires more extensive usage of the multimedia object for advertising, promoting, comparison, and presentation of the merchandise, as well as the visual communications between the merchants and the consumer. Therefore, the object of this project is to provide a intelligent browser which is allowed to provide better optimization and management of the hyperlink as well as efficient utilization of the multimedia objects.

The nature of the multimedia object has introduced several design challenges for the design of a new intelligent browser. Namely, the appropriate presentation of the object data structure, the repetitive short range navigation of the multimedia object, and the simultaneous overview of multiple objects. This is because a multimedia object comprises more than one data types, it can selectively comprises image, audio, graphics, video, or text. Furthermore, a multimedia object is a complex object that often requires additional reference to other objects. Finally, as multimedia objects are stored and retrieved from a database, it is not easy to describe multimedia objects in formal textual terms through traditional query language. Therefore our new browser would also need to provide with complementary query capability in order to allow user to take advantage of the human cognitive capability and to navigate database for multimedia object without sufficient knowledge of the query language and the organization of the database.

Performance Evaluation

Today's browsers have limited capability of viewing multiple objects at the same time, due to the constraint of the display resolution, it is not feasible to present detail views of all the retrieved objects simultaneously. In the case of our browser, an icon, or a simplified version of the object, are used to represent the partial view of an object, such partial view can be one of the pages, or one of the attributes of an object. Therefore, instead of a full resolution image, only a small image is displayed. Our system first observe the traffic condition of the network, the system then provide a bandwidth controller for producing the allowed transmission bandwidth budget. According to the budget, a complex icon is produced which comprises compressed signal with much reduced signal resolution.

From the operation viewpoint, our browser first formulate a query at a client device and retrieve a set of multimedia objects from the database via the server according to the multiple path selected from the class composition hierarchy. The browser then request the server to perform filter function in order to create a set of projected objects from the retrieved set of multimedia objects. The browser further produce a complex icon, which comprises thumbnails

of the selected projected image. The complex icon is sent and presented to the user at the client device for viewing multiple icon at the same time and for determining how to further proceed with the next navigation path.

The advantage of our approach is that, without repetitive navigation, a user can gain overview of the objects and to refer to the next desired object via complex icon simultaneously. Each of the icon reflects conceptual structure of a complex object by presenting several path value of the object. Therefore, selectivity of the multimedia object is significantly improved. Finally, our browser allows the interleaving of query and browsing operation so that query results can be incrementally refined.

Accordingly, after the user initiate the query request and retrieve a set of objects from the database, the browser further perform intelligent algorithm to group said set of objects into a plurality of subsets of objects, said browser further schedule the presentation sequence of said plurality subsets of objects so that each subset of objects is presented to the user one at a time. The browser further formulate a complex icon to present said subset of objects to the users for browsing. This would allows the user to get an overview of the entire subset of the objects, and to view the representation of the next or previous object provided the user choose to further proceed with the same navigation path. Accordingly, user no longer have to deal with the short range navigation, i.e., proceed to the next or previous objects repetitively.

The complex icon browser provides user the ability to browse a database at a conceptual level as well at an instance level, therefore meaningful information such as the structure of a complex object can be conveyed. The object-oriented data model that we consider here has classes whose instances are also objects. Therefore, there is an one-to-one correspondence between the name of those class and the user defined data type. User defined data types are built form atoms, media type, user defined types, tuple, list, and set constructors. The browsing model describes the window, complex icons, types, and operations for complex icon browsing

Conclusions

We have successfully implemented the prototype for Microsoft Window NT. It provides the functionality of presentation and minimization for each media types such as image, audio, and video. As for motion video data type, a commercial MPEG encoder and decoder are used to provide encoding and decoding of video images..

In this paper, a complex icon browser is presented, which overcome the overview of multimedia object and the repetitive short-range navigation. For the proposed method, we define a browser data model, and design the run-time execution mechanism using such data model. Our system enhances the expressive power of the icon by allowing each icon to represent the value of several paths on the composition class hierarchy level. We have further improve the selectivity of an multimedia object. Finally, without repetitive navigation, users are allowed to observe object as well as the referred objects simultaneously.

References

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