MicroXplore: A Prototype for Exploration on Databases with Microbial Information

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Abstract:

The databases are an important tool to store scientific information, currently in the area of microbiology these are used extensively, but the huge amount of data that can be collected on research and studies related microorganisms add more complexity, because exist a high semantic in each data. Design, develop, and implement a scientific database with this kind of information is a hard task, besides that the users need to be experts to find specific information related to different concepts on biological data, and often also they need to know the internal structure of the database to accomplish this task. On the other hand, the Web systems that provide access to these databases regularly have interfaces with poor design, unpredictable interface or complex interaction. The purpose this research is to look for alternatives to find data in a quick, intuitive and simple way. We present a prototype called MicroXplore which allows an exploration of microbial information through concepts relate to microbiology, it provides a glimpse into new ways of interaction and data search on a database. Now, we are working to obtain a real implementation on Mexican Culture Collection CDBB500, in order to expand our capacities of information management. Our approach consist on add two layers to traditional Web architecture in server side, these layers work together to obtain automatic and specialized queries without knowing some data, internal structure or complexity relational of the database. We also included the concept of rich interaction to allow data exploration through concepts inside visual elements that respond to user actions for update the interface. The prototype has an interface separate on three levels: Concepts, Catalogs and Results. The first level shows concepts related to microbiology, where the users can navigate through general concepts to specific concepts, after the second level is activated and it presents the catalogs related with the selected concept. Finally depending on the options given by the user on catalogs is generated an automatic query on asynchronous way, and data are displayed on level of results. This prototype increases the capacities and functionalities of traditional Web systems and it offers a new way of interaction between users and microbial information based on visual exploration of high level on database through a Web interface.

Key words: information systems, databases, interaction, microbial information