

Multimedia retrieval systems are supposed to provide the method and the interface for users to retrieve particular multimedia data from multimedia collections. Although, many different retrieval techniques evolved from times when the search in multimedia collections firstly appeared as a research task, not all of them can fulfill specific requirements that the multimedia exploration is determined for. The multimedia exploration is designated for revealing the content of a whole multimedia collection, quite often totally unknown to the users who retrieve data. Because of these facts a multimedia exploration system has to solve problems like, how to visualize (usually multidimensional) multimedia data, how to scale data retrieval from arbitrarily large collections and how to design such an interface that the users could intuitively use for the exploration.

Taking these problems into consideration, we proposed and evaluated ideas for building the system that is well-suited for the multimedia exploration. We outlined the overall architecture of a multimedia exploration system, created the Multi-Layer Exploration Structure (MLES) as an underlying index structure that should solve problems of efficient and intuitive data retrieval and we also proposed definitions of exploration operations as an interactive and intuitive interface that the users can use for the multimedia exploration.

We integrated the MLES into the web-based multimedia exploration system and enhanced its visualization framework with our defined exploration operations. On this exploration system we performed the evaluation of properties of the MLES and the multimedia operations engaging the real users so we were able to discuss results from this evaluation in the extensive user study.