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Abstract:	<p>The amounts of multimedia content available to the public has been increasing rapidly in the last decades and it is expected to grow exponentially in the years to come. This development puts an increasing emphasis on automated content-based information retrieval (CBIR) methods, which index and retrieve multimedia based on its contents. Such methods can automatically process huge amounts of data without the human intervention required by traditional methods (e.g. manual categorisation, entering of keywords). Unfortunately CBIR methods do have a serious problem: the so-called semantic gap between the low-level descriptions used by computer systems and the high-level concepts of humans.</p> <p>However, by emulating human skills such as understanding the contexts and relationships of the multimedia objects one might be able to bridge the semantic gap. To this end, this thesis proposes a method of using hierarchical objects combined with relevance sharing. The proposed method can incorporate natural relationships between multimedia objects and take advantage of these in the retrieval process, hopefully improving the retrieval accuracy considerably.</p> <p>The literature survey part of the thesis consists of a review of content-based information retrieval in general and also looks at multimodal fusion in CBIR systems and how that has been implemented previously in different scenarios.</p> <p>The work performed for this thesis includes the implementation of hierarchical objects and multimodal relevance sharing into the PicSOM CBIR system. Also extensive experiments with different kinds of multimedia and other hierarchical objects (segmented images, web-link structures and video retrieval) were performed to evaluate the usefulness of the hierarchical objects paradigm.</p> <p>Keywords: content-based retrieval, self-organizing map, multimedia databases</p>