

A Proposal for Digital Library Protection

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Abstract

We propose systematic digital library protection by patentable content-based retrieval processes, especially on image digital libraries in specified domains, without any excessively exclusive protection in general domains.

The proposed systematic method assures content-based retrieval processes to uniformly classify candidate images for retrieval into mutually exclusive classes of similar images in a certain specified domain. That specified domain has an identical combination of classes of similar images to which all the possible combinations of those classes converge, as outlined in Fig. 1.

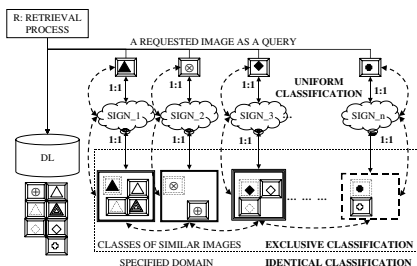


Figure 1. Classification in a specified domain.

By patenting those retrieval processes that satisfy our proposed method in the specified domain, then any other digital library systems could not be implemented without the equivalents to those retrieval processes. Any digital library creation by equivalent digital content collection in the specified domain means direct misappropriation, *i.e.*, infringement of the equivalents to those patented retrieval processes. The retrieval processes contain parameter setting components that define the scope of the equivalents to those retrieval processes with clear boundary [1]. Consequently, the patent enforcement over those retrieval processes restricts any more digital library creation as a sys-

tematic catalyst of protection over the digital contents of their target digital library in the specified domain, without any excessively exclusive protection in general domains, as outlined in Fig. 2.

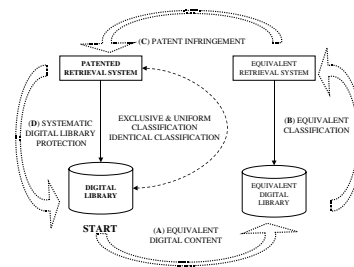


Figure 2. Systematic digital library protection.

We have provided our proposed method with mathematical formulation and its brief proofs. In the course of proving, we have applied topologic formulation to the relations of images, signs and classes of similar images. We have also applied our method for its case study to several medical image retrieval systems on brain and lung tumors, *etc.* that are formed based on domain-specific approach of CBIR.

Our proposed method is based on the technical property of domain-specific approach of content-based retrieval, especially on its parameter setting component. Its potential application grows as expansion of networked digital libraries with domain-specific approach of CBIR. We have a plan to publish a paper on the proposed method with its mathematical reasoning and a number of case studies.

References

- [1] H. Sasaki and Y. Kiyoki. Patenting the Processes for Content-based Retrieval in Digital Libraries. In *Digital Libraries: People, Knowledge, & Technology, 5th Int'l Conf. on Asian Digital Libraries, ICADL 2002 Proc.*, LNCS, No. 2555, pages 471–482, Singapore, December 2002. Springer-Verlag.