

Content-Based Video Retrieval

A Database Perspective

The area of content-based video retrieval is a very hot area both for research and for commercial applications. In order to design effective video databases for applications such as digital libraries, video production, and a variety of Internet applications, there is a great need to develop effective techniques for content-based video retrieval. One of the main issues in this area of research is how to bridge the semantic gap between low-level features extracted from a video (such as color, texture, shape, motion, and others) and semantics that describe video concept on a higher level. In this book, Dr. Milan Petković and Prof. Dr. Willem Jonker have addressed this issue by developing and describing several innovative techniques to bridge the semantic gap. The main contribution of their research, which is the core of the book, is the development of three techniques for bridging the semantic gap: (1) a technique that uses the spatio-temporal extension of the Cobra framework, (2) a technique based on hidden Markov models, and (3) a technique based on Bayesian belief networks. To evaluate performance of these techniques, the authors have conducted a number of experiments using real video data. The book also discusses domain solutions versus general solution of the problem. Petković and Jonker proposed a solution that allows a system to be applied in multiple domains with minimal adjustments. They also designed and described a prototype video database management system, which is based on techniques they proposed in the book.

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Milan Petković
Willem Jonker

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