

Guest Editor's Introduction

Multimedia authoring and presentation techniques

B. Prabhakaran

School of Computing, National University of Singapore, Singapore 117543

Multimedia content is being increasingly used for presentations, be it in formal lectures and documents or informal home pages. Authoring a multimedia presentation involves describing spatial and temporal relationships governing the objects composing a document. While spatial relationships specify where (on the user's screen) objects are to be presented, temporal relationships describe when and how objects presentations are to be synchronized. In a distributed environment, a multimedia presentation is carried out by retrieving and delivering objects according to their spatial and temporal relationships described by the author(s). In such environments, continuity of a presentation can be maintained by pre-fetching objects based on their temporal relationships and the system load (such as network traffic and server workload). Flexibility in temporal relationships can help in adapting to varying system loads and maintain continuity of presentation. Hence, the techniques used for authoring not only influence the aesthetics of presentations but also the efficiency.

This special issue includes papers covering a wide range of multimedia authoring and presentation techniques: real-time authoring, web presentations, audio and video navigation/authoring, and databases for multimedia presentations. The first paper by Muller and Ottmann discusses a system that automates recording and replay of multimedia presentations. This system comprises an integrated text and graphics editor for preparing presentations as well as a recording component that captures in real-time the various streams of multimedia presentations. Named, *Authoring on the Fly*, the system has been extensively used over the Mbone net. In the next paper, Borning *et al.* propose a constraint-based framework for laying out multimedia documents on the Internet. This framework can be used by both authors and viewers to exercise constraints on the page layout. The appearance of a document page during its presentation depends on the *negotiation* between the author and the viewer through the specified constraints.

De Roure and Blackburn, in the third paper, present a system that allows content-based navigation of music, using melodic pitch contours. The system integrates hypermedia

navigation and content-based retrieval techniques for this purpose. Navigation is supported by means of a *link service* along with a query process on a music database based on melodic pitch contours. This system incorporates techniques for storing and querying contours, and a set of component-based navigational hypermedia tools. The fourth paper is on a video authoring system called *Zodiac* that employs an innovative edit history abstraction. This system, developed by Chiueh *et al.*, facilitates video authoring by means of a powerful *branching history* model that allows users to organize the authoring process. *Zodiac* also carries out shot and boundary detection by analyzing the edit history. For its operations, *Zodiac* uses a multimedia file system, MMFS, and an internal buffer manager that handles transparent lossless compression/decompression.

Adali *et al.*, in the last paper, describe an architecture comprising a multimedia presentation algebra for creating interactive multimedia presentation databases. The multimedia presentation algebra can operate on presentation trees whose branches reflect different possibilities for delivering multimedia presentations. This algebra can be integrated into a query language that can support presentation database operations such as select and join. Based on these operations, the query language can be used as an authoring tool for multimedia presentations. In conclusion, this special issue carries several interesting approaches for multimedia authoring and presentations. We believe that the papers in this special issue will help the multimedia community to more easily make use of these widely spread results and will also stimulate further research in this topic.

Acknowledgement. We would like to thank all authors for their contributions and patience with the rounds of changes required as suggested by reviewers. We are grateful to all the reviewers who did an excellent job by providing detailed and useful comments on the papers.

B. Prabhakaran
Guest Editor