

# MULTIMEDIA DATABASE MANAGEMENT SYSTEMS

RESEARCH ISSUES AND FUTURE DIRECTIONS

*Edited by*

**Bhavani Thuraisingham, Kingsley C. Nwosu  
and P. Bruce Berra**



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# Multimedia Database Management Systems

**Bhavani Thuraisingham**



## **Multimedia Database Management Systems:**

Multimedia Database Management Systems B. Prabhakaran, 2012-10-26 Multimedia Database Management Systems presents the issues and the techniques used in building multimedia database management systems Chapter 1 provides an overview of multimedia databases and underlines the new requirements for these applications Chapter 2 discusses the techniques used for storing and retrieving multimedia objects Chapter 3 presents the techniques used for generating metadata for various media objects Chapter 4 examines the mechanisms used for storing the index information needed for accessing different media objects Chapter 5 analyzes the approaches for modeling media objects both their temporal and spatial characteristics Object oriented approach with some additional features has been widely used to model multimedia information The book discusses two systems that use object oriented models OVID Object Video Information Database and Jasmine The models for representing temporal and spatial requirements of media objects are then studied The book also describes authoring techniques used for specifying temporal and spatial characteristics of multimedia databases Chapter 6 explains different types of multimedia queries the methodologies for processing them and the language features for describing them The features offered by query languages such as SQL MM Structured Query Language for Multimedia PICQUERY and Video SQL are also studied Chapter 7 deals with the communication requirements for multimedia databases A client accessing multimedia data over computer networks needs to identify a schedule for retrieving various media objects composing the database The book identifies possible ways for generating a retrieval schedule Chapter 8 ties together the techniques discussed in the previous chapters by providing a simple architecture of a distributed multimedia database management system Multimedia Database Management Systems can be used as a text for graduate students and researchers working in the area of multimedia databases In addition the book serves as essential reading material for computer professionals who are in or moving to the area of multimedia databases

**Managing and Mining Multimedia Databases** Bhavani Thuraisingham, 2001-06-28 There is now so much data on the Web that managing it with conventional tools is becoming almost impossible To manage this data provide interoperability and warehousing between multiple data sources and systems and extract information from the databases and warehouses various tools are being developed In fact developments in multimedia databa

**Multimedia Database Management Systems** B. Thuraisingham, Kingsley C. Nwosu, P. Bruce Berra, 2012-12-06 Multimedia Database Management Systems brings together in one place important contributions and up to date research results in this important area Multimedia Database Management Systems serves as an excellent reference providing insight into some of the most important research issues in the field

**Multimedia Database Systems** Kingsley C. Nwosu, B. Thuraisingham, P. Bruce Berra, 2012-12-06 Multimedia Database Systems Design and Implementation Strategies is a compendium of the state of the art research and development work pertaining to the problems and issues in the design and development of multimedia database systems The chapters in the book are developed

from presentations given at previous meetings of the International Workshop on Multi Media Data Base Management Systems IW MMDBMS and address the following issues development of adequate multimedia database models design of multimedia database query and retrieval languages design of indexing and organization techniques development of efficient and reliable storage models development of efficient and dependable retrieval and delivery strategies and development of flexible adaptive and reliable presentation techniques Multimedia Database Management Systems Guojun Lu,1999

Traditional database management systems can't handle the demands of managing multimedia data with the rapid growth of multimedia platforms and the world wide web database management systems must now process store index and retrieve alphanumeric data bitmapped and vector based graphics and video and audio clips both compressed and uncompressed The comprehensive systematic approach of Multimedia Database Management Systems presents you with current and emerging methods for managing the increasing demands of multimedia databases and their inherent design and architecture issues

*Multimedia Database in Perspective* Peter M.G. Apers, Henk M. Blanken, Maurice A.W. Houtsma, 2012-12-06 During the last decade multimedia has emerged as a major research and development area Pushed by advanced technology like huge capacity storage devices fast networks and powerful work stations new applications have arisen Many definitions of multimedia systems exist one of them being computer systems that support interactive use of at least one of the following information sources graphics image voice sound and video These systems have caused a boom in the world of entertainment but also in other business areas great opportunities for novel products and services are available The size of multimedia data is often huge and the storage of huge amounts of data is a task normally allocated to database management systems Although some modern database management systems offer facilities to support development of multimedia applications many problems related to multimedia support are still not well understood This book reports on research efforts to solve some of these problems An introductory knowledge of databases and also of operating systems and network technology is assumed The book is very suitable as material for courses at senior or graduate level but also for upgrading the skills of computer scientists working on database management systems multimedia systems or applications The book consists of four parts Part I is called Requirements for a Multimedia Database and comprises chapters one to three Chapter one presents an outline of the book **Multimedia Database Management Systems** B. Prabhakaran, 1996-10-31 Multimedia Database Management Systems presents the issues and the techniques used in building multimedia database management systems Chapter 1 provides an overview of multimedia databases and underlines the new requirements for these applications Chapter 2 discusses the techniques used for storing and retrieving multimedia objects Chapter 3 presents the techniques used for generating metadata for various media objects Chapter 4 examines the mechanisms used for storing the index information needed for accessing different media objects Chapter 5 analyzes the approaches for modeling media objects both their temporal and spatial characteristics Object oriented approach with some additional features has been widely used to model

multimedia information The book discusses two systems that use object oriented models OVID Object Video Information Database and Jasmine The models for representing temporal and spatial requirements of media objects are then studied The book also describes authoring techniques used for specifying temporal and spatial characteristics of multimedia databases Chapter 6 explains different types of multimedia queries the methodologies for processing them and the language features for describing them The features offered by query languages such as SQL MM Structured Query Language for Multimedia PICQUERY and Video SQL are also studied Chapter 7 deals with the communication requirements for multimedia databases A client accessing multimedia data over computer networks needs to identify a schedule for retrieving various media objects composing the database The book identifies possible ways for generating a retrieval schedule Chapter 8 ties together the techniques discussed in the previous chapters by providing a simple architecture of a distributed multimedia database management system Multimedia Database Management Systems can be used as a text for graduate students and researchers working in the area of multimedia databases In addition the book serves as essential reading material for computer professionals who are in or moving to the area of multimedia databases Multimedia Database Management Systems B. Thuraisingham, Kingsley C. Nwosu, P. Bruce Berra, 1997-02-28 Multimedia Database Management Systems brings together in one place important contributions and up to date research results in this important area Multimedia Database Management Systems serves as an excellent reference providing insight into some of the most important research issues in the field

**Image Database Management in a Multimedia System** Klaus Meyer-Wegener, 1988 A general concept for the representation of multimedia data by unformatted and formatted data is introduced It leads to a basic function approach to the design and development of multimedia database systems which extends a relational database management system with new attribute types In this paper raster or bitmap images are used as an example The structure of image values is defined and a basic set of operations for access and manipulation is proposed These operations can be integrated into a query language like SQL To facilitate a contents oriented search on multimedia data in general and on images in particular text descriptions are introduced into the database that allow users to indicate the contents of an image The well established techniques of information retrieval can be applied to search for these descriptions The proposed system allows us to model images that are assigned to objects as well as stand alone images The paper finally sketches a prototype implementation on top of an existing relational database management system Ingres Keywords Multimedia databases Image databases Theses mjm Principles of Multimedia Database Systems V. S. Subrahmanian, 1998 Until recently databases contained easily indexed numbers and text Today in the age of powerful graphically based computers and the world wide web databases are likely to contain a much greater variety of data forms including images sound video clips and even handwritten documents When multimedia databases are the norm traditional methods of working with databases no longer apply How do you query a video library or an image database containing x rays or sounds in an audio database Principles of Multimedia Database

Systems explains how to work with these new multimedia data forms It is the first comprehensive treatment of the skills and techniques required to build maintain and query multimedia databases This book presents the mix of techniques necessary for working with multimedia databases including synthetic solutions for the design and deployment of multimedia database systems Because rapid technological developments are constantly changing the landscape of multimedia databases the book teaches basic theoretical principles applicable to any database Covers the major issues of multimedia database design with a strong focus on distributed multimedia databases Discusses important topics including how to organize the vast data types storage and retrieval and creation and delivery of multimedia presentations Organized around the lively scenario of a crime fighting database that evolves as new concepts are introduced Includes numerous exercises and suggestions for programming projects Additional materials on the web include updates on line supplements and links to downloadable software

**A Multimedia Database Management System Supporting Contents Search in Media Data** Vincent Y. Lum,1989 It is now feasible to store and manage in computers new types of data like text images graphics and sound recordings This paper claims that database management systems should be extended to organize these new types of data and to enable search based on their contents Media objects are modelled as attributes of abstract data types The contents is captured in terms of natural language descriptions and is translated by a parser into predicates for easy matching with query phrases The implications of this approach are discussed Data organization for multimedia including contents representation the dictionary used by the parser to recognize words and assign predicates rules to use semantic relationships in the query evaluation and access paths to speed up the search for the descriptions The result is an architecture for multimedia database management systems that combines the additional components needed with the conventional data management and identifies their ways of interaction Three types of user interfaces are offered that require different levels of skill The architecture is modular and allows the integration of more advanced AI techniques once they become available

**Multimedia and Imaging Databases** Setrag Khoshafian,Brad Baker,1996 Affordable and mainstream manipulation of multimedia data types will lead to tremendous growth in imaging and multimedia data in general computing environments Multimedia and imaging applications can now provide benefits to common business applications by integrating voice sound images animation and digitized video Ultimately it will be possible to convert all information that is currently stored on paper video and film into a digitized environment This will allow users to organize search and route multimedia objects over local and wide area networks in real time The authors introductory level presentation of this new class of data types supplies the database technology required for effective manipulation and storage Multimedia and database experts Khoshafian and Baker aptly illustrate the ability of multimedia database systems to concurrently share access and query large collections of multimedia information They introduce the elemental concepts of object and relational databases and then apply them to multimedia and imaging databases Fundamental database topics discussed include querying transaction support recovery

security and storage This book provides information essential to the incorporation of multimedia databases that will improve the quantity and quality of information manipulated by computer users in many areas including medicine computer aided design and information retrieval systems

**Integrating Advanced Techniques Into Multimedia DBMS (Database Management Systems).** Vincent Y. Lum,1987 Database management systems have been developed mainly for commercial and business processing As such it generally manages formatted data rather than information which is less structured and comes in many forms such as text graphics images voices and signals Beyond the capability of handling multimedia information non business application areas call for further requirement Real time processing risk assessment and partial answers are some of the more important requirements especially in the military applications In this paper we discuss issues involved in creating such advanced database management system and propose some approaches

**Multimedia Database Management Systems** Prabhakaran B.,2007-03-01

**A Conceptual Design of a Multimedia DBMS (Database Management System) for Advanced Applications** Vincent Y. Lum,Klaus Meyer-Wegener,NAVAL POSTGRADUATE SCHOOL MONTEREY CA.,1988 Managing Multimedia Data is becoming more and more important There are already various operational systems for this task but they are usually built as special purpose systems and lack the general capability as exhibited in a database management system DBMS suitable for a wide variety of applications This paper argues that DBMS should be extended to manage multimedia data as well as the standard structured data exploiting all the established techniques and providing the new data types to all applications The paper examines the characteristics of multimedia data and outlines some of the current research projects in this area It recognizes the significant and successful applications of the database technology and information retrieval techniques developed in the last two decades and proposes to capitalize on these advances to develop a DBMS for handling multimedia data The paper also sketches some directions where future research may be headed to solve the complex issues in multimedia data processing

Keywords Multimedia databases Image management Theses mjm

**Multimedia Database Management Systems** Association for Computing Machinery,1995

**Multimedia Database Systems** V.S. Subrahmanian,Sushil Jajodia,2012-12-06 With the rapid growth in the use of computers to manipulate process and reason about multimedia data the problem of how to store and retrieve such data is becoming increasingly important Thus although the field of multimedia database systems is only about 5 years old it is rapidly becoming a focus for much excitement and research effort Multimedia database systems are intended to provide unified frameworks for requesting and integrating information in a wide variety of formats such as audio and video data document data and image data Such data often have special storage requirements that are closely coupled to the various kinds of devices that are used for recording and presenting the data and for each form of data there are often multiple representations and multiple standards all of which make the database integration task quite complex Some of the problems include what a multimedia database query means what kinds of languages to use for posing queries how to develop compilers

for such languages how to develop indexing structures for storing media on ancillary devices data compression techniques how to present and author presentations based on user queries Although approaches are being developed for a number of these problems they have often been ad hoc in nature and there is a need to provide a principled theoretical foundation

**Multimedia Database Management Systems** Weimin Jiang, 1995 International Workshop on Multi-media Database Management Systems International Workshop on Multi-Media Database Management Systems, 1998 This volume covers multimedia data storage and display multimedia indexing and retrieval video data management content based retrieval image processing interactive multimedia systems buffer management techniques and multimedia databases *Data Management Systems* Bhavani Thuraisingham, 1997-05-19 As the information contained in databases has become a critical resource in organizations efficient access to that information and the ability to share it among different users and across different systems has become an urgent need The interoperability of heterogeneous database systems literally the ability to access information between or among differing types of databases is the topic of this timely book In the last two decades tremendous improvements in tools and technologies have resulted in new products that provide distributed data processing capabilities This book describes these tools and emerging technologies explaining the essential concepts behind the topics but focusing on practical applications Selected products are discussed to illustrate the characteristics of the different technologies This is an ideal source for anyone who needs a broad perspective on heterogeneous database integration and related technologies



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## **Table of Contents Multimedia Database Management Systems**

1. Understanding the eBook Multimedia Database Management Systems
  - The Rise of Digital Reading Multimedia Database Management Systems
  - Advantages of eBooks Over Traditional Books
2. Identifying Multimedia Database Management Systems
  - Exploring Different Genres
  - Considering Fiction vs. Non-Fiction
  - Determining Your Reading Goals
3. Choosing the Right eBook Platform
  - Popular eBook Platforms
  - Features to Look for in an Multimedia Database Management Systems
  - User-Friendly Interface
4. Exploring eBook Recommendations from Multimedia Database Management Systems
  - Personalized Recommendations
  - Multimedia Database Management Systems User Reviews and Ratings
  - Multimedia Database Management Systems and Bestseller Lists
5. Accessing Multimedia Database Management Systems Free and Paid eBooks
  - Multimedia Database Management Systems Public Domain eBooks
  - Multimedia Database Management Systems eBook Subscription Services

- Multimedia Database Management Systems Budget-Friendly Options
- 6. Navigating Multimedia Database Management Systems eBook Formats
  - ePub, PDF, MOBI, and More
  - Multimedia Database Management Systems Compatibility with Devices
  - Multimedia Database Management Systems Enhanced eBook Features
- 7. Enhancing Your Reading Experience
  - Adjustable Fonts and Text Sizes of Multimedia Database Management Systems
  - Highlighting and Note-Taking Multimedia Database Management Systems
  - Interactive Elements Multimedia Database Management Systems
- 8. Staying Engaged with Multimedia Database Management Systems
  - Joining Online Reading Communities
  - Participating in Virtual Book Clubs
  - Following Authors and Publishers Multimedia Database Management Systems
- 9. Balancing eBooks and Physical Books Multimedia Database Management Systems
  - Benefits of a Digital Library
  - Creating a Diverse Reading Collection Multimedia Database Management Systems
- 10. Overcoming Reading Challenges
  - Dealing with Digital Eye Strain
  - Minimizing Distractions
  - Managing Screen Time
- 11. Cultivating a Reading Routine Multimedia Database Management Systems
  - Setting Reading Goals Multimedia Database Management Systems
  - Carving Out Dedicated Reading Time
- 12. Sourcing Reliable Information of Multimedia Database Management Systems
  - Fact-Checking eBook Content of Multimedia Database Management Systems
  - Distinguishing Credible Sources
- 13. Promoting Lifelong Learning
  - Utilizing eBooks for Skill Development
  - Exploring Educational eBooks
- 14. Embracing eBook Trends

- Integration of Multimedia Elements
- Interactive and Gamified eBooks

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