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**September 30 - October 5, 2001**  
**Ottawa, Ontario, Canada**

The ninth ACM Multimedia Conference will be held in Ottawa, Ontario, the capital city of Canada. This beautiful city is often called "Silicon Valley North" because of the high concentration of major telecommunications and software companies, such as NORTEL, ALCATEL/NEWBRIDGE, MITEL, COREL, COGNOS, JDS Uniphase, Entrust and many others. The conference complements this setting by presenting and exploring technological and artistic advancements in multimedia. Technical issues, theory and practice, artistic and consumer innovations will bring together researchers, artists, developers, educators, performers, and practitioners of multimedia. Present your work at Multimedia 2001 and define the future of multimedia in the next millennium.

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# ACM Multimedia 2001

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**C. Multimedia tools, end-systems and  
applications Track**

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Christian Breiteneder, Vienna University  
of Technology  
Stavros Christodoulakis, MU.S.I.C.,  
Greece  
Isabel Cruz, Worcester Polytechnic  
Institute  
Jayanta Dey, Knumi, Inc.  
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University  
Joerg Haake, GMD-IPSI, Germany  
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Rainer Lienhart, Intel Corporation  
Klara Nahrstedt, University of Illinois at  
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Cyrus Shahabi, University of Southern  
California  
Frederic Andres, National Institute of  
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## Tutorials Schedule

### ACM Multimedia 2001, Ottawa, Canada

#### **SUNDAY, Sept. 30, 2001**

- [SEP30-A - MPEG-7: PUTTING IT ALL TOGETHER \(Full Day\)](#)
- [SEP30-B - WIRELESS SOFTWARE DESIGN FOR HANDHELD DEVICES \(am\)](#) - **CANCELLED**
- [SEP30-C - PRACTICAL DIGITAL LIBRARIES OVERVIEW \(am\)](#) - **CANCELLED**
- [SEP30-D - CONTENT ANALYSIS AND CODING OF DIGITAL AUDIO AND VIDEO \(pm\)](#)
- [SEP30-E - MULTIMEDIA MIDDLEWARE \(pm\)](#)

#### **MONDAY, OCT. 1, 2001**

- [OCT01-A - MULTIMEDIA TECHNOLOGIES & APPLICATIONS IN THE NEW INTERNET \(Full Day\)](#)
- [OCT01-B - SCALABLE MULTIMEDIA SERVERS \(am\)](#)
- [OCT01-C - OBJECT-ORIENTED MODELING OF MULTIMEDIA APPLICATIONS WITH UML \(am\)](#) - **CANCELLED**
- [OCT01-D - IP TELEPHONY \(pm\)](#)
- [OCT01-E - SMIL2.0: THE NEXT WAVE OF MULTIMEDIA ON THE WEB \(pm\)](#)

#### **Day 1 Tutorials, SUNDAY, Sept. 30, 2001**

##### **SEP30-A MPEG-7: PUTTING IT ALL TOGETHER**

SUNDAY, Sept. 30, 2001, 8:30 am – 5:00 pm

##### **Authors:**

<b>Adam T. Lindsay</b>	Lancaster University, UK	<a href="mailto:atl@comp.lancs.ac.uk">atl@comp.lancs.ac.uk</a>
<b>Ed Hartley</b>	Lancaster University, UK	<a href="mailto:e.hartley@lancaster.ac.uk">e.hartley@lancaster.ac.uk</a>
<b>Cédric Thiénot</b>	Expway, France	<a href="mailto:cedric.thienot@expway.fr">cedric.thienot@expway.fr</a>

**Duration:** Full day

**Level:** Intermediate

##### **Intended audience:**

A large number of people are aware of the existence of MPEG-7 as a pending international standard, but few know enough to implement parts of the standard appropriate for applications. This tutorial is for those who work in related areas, such as programmers and engineers who have developed content-based indexing schemes, or are approaching the multimedia content description standard with a view to the implementation of a related system. A basic knowledge of XML, document indexing, and/or signal processing is helpful.

##### **Tutorial Overview:**

Attendees will be introduced to the principles of multimedia content description, and the importance of making clear distinctions between multiple representations of the same content. This is critical background material, as the MPEG-7 standard does not strongly make these distinctions whilst it does provide a broad selection of tools to support these representations.

Following these underpinnings, we will examine the components that go into 1) understanding the specifics of the standard and 2) implementing a system that uses MPEG-7 descriptions. This naturally includes an introduction to the Description Definition Language as an XML-Schema language extension that is used to express nearly all of the MPEG-7 standard. Building on that, the basic Multimedia Description Schemes provide the foundation for the specific description capabilities of the standard. We will then consider the rest of the Multimedia Description Schemes, the Audio, the Video, and the Systems parts of the standard through an approach that is focussed on the needs of MPEG-7 system implementers.

Clearly, there is a limit to the detail possible in the time available, but we will stress a pragmatic approach to working with the standard. Participants will not be overloaded with unnecessary detail but rather will emerge with a conceptual understanding of multimedia description, the basic concepts that permeate the standard, and the knowledge of where to look in the standard for further information.

The content of the tutorial will stress the practical application of MPEG-7 in the construction of an application. This will be based on research work carried out by Adam Lindsay and Ed Hartley which in turn rests on more than 10 years research work into multimedia content representation and delivery by Alan Parkes and other members of the Lancaster University Distributed Multimedia Research Group. This group has several current research projects related to MPEG-7 description application, creation, and delivery in progress.

### **Morning Session: Introduction and Basic Application Tools**

Introduction [Lindsay, 25 min]

*The introduction is built upon introducing the different ways people might approach meta-data, and the importance of each of them. These "multiple representations" are used as a unifying theme for the day.*

- What is multimedia content description?
- Content description over time
- Information retrieval in the internet age
- Converging trends for multimedia
- The need for multiple representations
- Thinking clearly, dividing the problem

MPEG-7 Introduction [Hartley Lindsay, 50 min]

*We give a background on MPEG and its importance to industry (implying the impact MPEG-7 can have). We draw upon our history of direct involvement with the group to detail the original goals of MPEG-7, before multimedia content description seemed feasible, and its present role in an industry full of attempts at meta-data for Multimedia.*

- MPEG history [Hartley]
- MPEG-7 Motivation
- MPEG-7 Organisation
  - Committees and Standards
  - Organisation of the Standard document
  - How the pieces fit, how the pieces relate to our theory
- MPEG-7 as a Toolkit for Content Representation [Lindsay]
  - Multiple Representations
  - Multiple Viewpoints
- Overview of an MPEG-7 application

Break [20 min]

MPEG-7 Basics: DDL [Thiénot, 40 min]

*Perhaps the most important part of understanding the MPEG-7 standard lies in the Description Definition Language (DDL). It is the representation language that the rest of the standard is built upon, and feeling comfortable with reading the code is critical for reading the international standard.*

- A brief history of mark-up languages
- XML and XML-Schema
- The need for a DDL
- DDL basics

- Understanding the code
- Importance of keeping Schema and Description separate
- Writing a simple Description Scheme
- Role of DDL in an MPEG-7 Application

#### MDS Basic Tools [Lindsay, Hartley, 60 min]

*After the DDL, the next critical parts of MPEG-7 are the basic tools detailed in the Multimedia Description Schemes part of the standard. They describe not only basic data types such as vectors and matrices, but also a temporal model, a spatio-temporal decomposition that permeates the standard, ontologies, and modelling principles.*

- Basic Data-types [Lindsay]
- Time
- Segments
- Links and Reference [Hartley]
- Controlled term lists & ontologies
- People, Places, and Things
- Role of Basic MDS Tools in an MPEG-7 Application

*Lunch 12:00 -14:00*

#### **Afternoon Session: Overview of Media Delivery and Specialised Application Tools**

##### Visual Tools [Hartley, 30 min]

*The visual tools play a fundamental role in the analysis multimedia content. They support image and video region and feature analysis*

- Basic Video Descriptor Structures
- Color, Texture and Shape Descriptors
- Camera, trajectory, parametric and activity motion
- Region and spatio-temporal locators
- Others
- Role of Specialised Video Tools in an MPEG-7 Application

##### Audio Tools [Lindsay, 30 min]

*As long-standing MPEG-7 Audio AhG chairman, Mr. Lindsay has given an overview of the audio tools many times. The Audio part of the standard describes both high-level tools, which are packages of tools arrayed about an application area such as spoken content or music, and a low-level framework, which allows implementers to build their own audio descriptions.*

- Audio “applications”
- Audio low-level framework
- What goes into an audio system?
- Role of Specialised Audio Tools in an MPEG-7 Application

##### MDS Specialised Tools [Hartley, 30 min]

*MDS, multimedia description schemes in addition to providing a set of basic tools also provide a broad set of tools to support a variety of application classes. These tools will be described together with their role in building an application.*

- Media Description Schemes
- Content Structure, Organisation, Navigation and Access
- User Interaction
- Role of Specialised MDS Tools in an MPEG-7 Application

*Break [20 min]*

##### Systems Tools [Thiénot, 30 min]

*The Systems tools form the glue that allow the descriptions coming from all other parts of the standard to be transmitted reliably and efficiently.*

- Binary format
- File format
- Synchronisation and Delivery
- Role of Systems in an MPEG-7 Application

##### MPEG-7 Application Architectures and Reference Software [Hartley, 30 min]



- A Single media Example Application
- A Multimedia Example Application
- Role and Status of MPEG-7 Reference Software

Conclusions [Lindsay 10 min]

- Relationship of MPEG-7 to other standardisation activities
- Role in Marketplace
- Future Directions.

## Biographical Notes

### Adam T. Lindsay

After joining the Belgian private research company Starlab as one of its charter Principal Investigators, Adam Lindsay became aware of the nascent effort in MPEG-7, and for over three years led Starlab's activities in Aware and Autonomous Multimedia. Since then he has been a researcher in the Multimedia Content Group at Lancaster University under the tutelage of Alan Parkes. Adam's interest in multimedia content description was born during his MSc earned at the MIT Media Lab, investigating a cognitively-motivated mid-level representation for melody, to enable query-by-humming. He draws upon his four years of direct involvement with MPEG-7, moving from leading activities within Requirements, Applications, and Proposal Evaluation to his long-standing position as MPEG-7 Audio chairman. Adam has been an invited speaker at several talks introducing MPEG-7 over the years, most recently at the Symposium for Multimedia Standards for the New Millennium, in Brussels, at the MPEG-7 Awareness Event in Singapore, and at a workshop at AES, in Amsterdam.

### Ed Hartley

Following an eighteen-year career in the electronics and telecommunication industries Ed Hartley graduated in 1996 with a BSc in Computer Science. Since then he has pursued research interests in Multimedia Content Representation and Annotation. He has contributed extensively to MPEG-7 throughout its development since 1997 as variously chair, co-chair, and contributor to the Requirements, DDL, Systems, MDS, Video and currently Conformance activities. Additionally he hosted the MPEG-7 technology evaluation meeting at Lancaster University and has contributed to liaison activities with other bodies such as SMPTE. He chairs the UK National Body MPEG Panel and has presented papers on MPEG-7 related topics at several conferences and at an IEE residential course.

### Cédric Thiénot

Cédric Thiénot graduated with a computer science engineer degree of the "Ecole Centrale" of Lyon in France. After completing his PhD in computer science from University of Paris IV on the domain of pseudo-intuitionistic logic and knowledge representation, Cédric joined the multimedia indexing team of University of Paris VI. He became responsible of the MPEG-7 activity and lead its activity during two years. Cédric contributed extensively to the definition of the MPEG-7 Description Definition Language since the beginning. He recently founded a company "Expway" dedicated to the processing, management and compression of XML files. Cédric is now involved in the DDL activity but also in the system groups where he contributed to development of the binary format of MPEG-7 (BiM).

## SEP30-B WIRELESS SOFTWARE DESIGN FOR HANDHELD DEVICES - **CANCELLED**

SUNDAY, Sept. 30, 2001, 8:30 am – 12:00 pm

### Author:

Qusay H. Mahmoud

Carleton University,  
CANADA

[qmahmoud@javacourses.com](mailto:qmahmoud@javacourses.com)

**Duration:** Half-day

**Objective:**

Participants will acquire knowledge about wireless programming techniques in general and Java programming for mobile devices in particular. They will know about the different techniques that can be used for wireless programming and how/when to use them. Issues in User Interface design for handheld devices will be discussed.

Background: knowledge of the Java programming language.

Presentation format: presentation based.

**Tutorial Overview:**

Most Internet technologies are designed for desktop and large computers running on reliable networks with relatively high bandwidth. Hand-held wireless devices, on the other hand, have a more constrained computing environment. They tend to have less memory, less powerful CPUs, different input devices, and smaller displays. The Wireless Application Protocol (or WAP), which is a specification developed by the WAP Forum, takes advantage of the several data-handling approaches already in use. Developing wireless applications using WAP technologies is similar to developing web pages with a markup language because it is browser based. Another approach to developing wireless applications is to use the Mobile Information Device Profile (MIDP).

With either WAP or MIDP, the Java programming language plays an important role. In WAP, Java Servlets and Java Server Pages (JSPs) can be used to generate Wireless Markup Language (WML) pages dynamically, and in MIDP, applications (also called MIDlets) are written in Java.

The tutorial will help participants understand the different technologies that can be used to develop wireless applications for hand-held devices.

The list of major topics to be covered in this tutorial includes:

- Handheld Device Markup Language (HDML)
- Compact HTML (cHTML)
- Wireless Application Protocol (WAP)
- Java 2 Micro Edition (J2ME)
- Kilo Virtual Machine (KVM)
- Mobile Information Device profile (MIDP)
- Palm Programming with Java
- Security Issues
- Useful Resources

**Biographical Note:**

**Qusay H. Mahmoud** provides Java consulting and training services. He has published dozens of articles on the Java programming language, including the MIDP and Palm programming articles for Sun Microsystems Java Developer Connection. He moderates the Device Programming for ITWorld.com. Qusay is the author of Distributed Programming with Java (Manning Publications, 1999).

**SEP30-C PRACTICAL DIGITAL LIBRARIES OVERVIEW - CANCELLED**

SUNDAY, Sept. 30, 2001, 8:30 am – 12:00 am

**Author:**

**Edward A. Fox**

Virginia Tech, USA

[fox@vt.edu](mailto:fox@vt.edu)

**Duration:** Half-day

**Level:** Introductory or intermediate

**Intended audience:**

Researchers, developers, practitioners, librarians, managers, or others who do not have extensive experience in the field of digital libraries and who want a broad overview.

**Objectives:**

Participants will leave with the knowledge of:

- Using metadata elements (objects) to catalog (multimedia) information
- Requirements for publishing electronically, including so works can be archived easily
- The key issues that arise for digital library system design and performance
- The commercial and legal factors in using and creating digital libraries
- A comprehensive understanding of digital library technology and its social implications

**Tutorial Overview:**

The tutorial will start with an overview of definitions, foundations, scenarios and perspectives. It will cover a variety of issues, including search, retrieval and resource discovery; multimedia/hypermedia; metadata (e.g., Dublin Core); electronic publishing; document models and representations; SGML and XML; database approaches; agents and distributed processing; 2D and 3D interfaces and visualizations; metrics; architectures and interoperability; commerce; educational and social concerns; and intellectual property rights, among others.

Case studies will be used to illustrate key concepts, including:

- Computer Science Teaching Center ([www.cstc.org](http://www.cstc.org))
- National Science (, Mathematics, Engineering, Technology Education) Digital Library (NSF NSDL)
- Networked Digital Library of Theses and Dissertations ([www.ndltd.org](http://www.ndltd.org))
- Open Archives Initiative ([www.openarchives.org](http://www.openarchives.org))

**Materials:**

For this tutorial, a packet will be prepared containing all of the PowerPoint slides used, along with some overview publications prepared by the instructor. For examples of some packets used previously, see <http://ei.cs.vt.edu/~dlib> and note that with this content on the WWW, the size of the packet can be reduced as needed to suit conference needs.

**OUTLINE**

***Part 1. Foundations***

- Early visions, definitions, resources/references, projects

***Part 2. Search, Retrieval, Resource Discovery***

- Information storage and retrieval, Boolean vs. natural language
- Indexing: Phrases, Thesauri, Concepts
- Federated search and harvesting, OAi, Crawlers/spiders/metasearch
- Integrating links and ratings

***Part 3. Multimedia, Representations***

- Text/audio/image/video/graphics/animation
- Capture, Digitization, Compression
- Standards, Interchange: JPEG, MPEG (including MPEG-7)
- Content-based retrieval, Playback, QoS

***Part 4. Architectures***

- Modular/componentized, Protocols
- Buses, Mediators, Wrappers

***Part 5. Interfaces***

- Workflow, Environments, Taxonomy of interface components, Visualization
- Design, Usability testing

**Part 6. Metadata**

- Ontologies, RDF
- MARC, Dublin Core, IMS
- Mappings, Crosswalks

**Part 7. Electronic Publishing, SGML, XML**

- Authoring, Presenting, Rendering
- Dual-publishing, Styles
- Structure, Semi-structured information, Tagging/markup, Structure queries

**Part 8. Database Issues**

- Extending database technology
- Structured and unstructured information
- Multimedia databases, Link databases
- Performance/replication/storage

**Part 9. Agents**

- Distributed issues
- Protocols, Negotiation

**Part 10. Commerce, Economics, Publishers**

- Preservation and archives
- Terms and conditions, Open collections, Self-archiving
- Economic models

**Part 11. Intellectual Property Rights, Security**

- Legal issues
- Copyright, Rights management

**Part 12. Social Issues**

- Cooperation and collaboration, Ratings, Annotation
- Educational applications, Digital divide
- Museums, Cultural heritage, International concerns
- Organizational acceptance/issues, Personalization

**Biographical Note:**

**Dr. Edward A. Fox** holds a Ph.D. and M.S. in Computer Science from Cornell University, and a B.S. from M.I.T. Since 1983 he has been at Virginia Polytechnic Institute and State University (VPI&SU, also called Virginia Tech), where he serves as Professor of Computer Science. He directs the Digital Library Research Laboratory, the Internet Technology Innovation Center at Virginia Tech, and varied R&D projects. He is general chair of the First ACM/IEEE Joint Conference on Digital Libraries. He is co-editor-in-chief of ACM Journal of Educational Resources in Computing (JERIC) and serves on the editorial boards of a number of journals. He has authored or co-authored many publications in the areas of digital libraries, information storage and retrieval, hypertext/hypermedia/multimedia, computational linguistics, CD-ROM and optical disc technology, electronic publishing, and expert systems.

**SEP30-D      CONTENT ANALYSIS AND CODING OF DIGITAL AUDIO AND VIDEO**

SUNDAY, Sept. 30, 2001, 1:30 pm-5:00 pm

**Author:**

**Stephan Fischer**

Mobile Video  
Communication (MVC),  
GERMANY

[sfischer@mvc.de](mailto:sfischer@mvc.de)

**Duration:** Half-day

**Level:** Introductory

**Tutorial Overview:**

Multimedia content processing, and digital storage and retrieval have become important research issues in the last decade. The tutorial will explain both the mechanisms necessary to analyze the content of digital audio and video, and the processing of such data in the context of MPEG-4. Content processing will be highlighted in a threefold approach. First, basic algorithms are explained which exploit basic features such as color, texture, loudness, frequencies, and pitch, to name a few. In a second step derived features such as the automatic detection of cuts, fades, dissolves, wipes or zooms are explained. In the third step, applications, for example the recognition of text or faces, will be explained, together with application examples in systems like QBIC, Informedia, Virage, or VisualSeek.

The table of contents is as follows:

1. Goals of Content Processing
2. Analysis of Still Images
  - 2.1 Features
  - 2.2. Distance calculation
3. Analysis of Picture Sequences
  - 3.1 Motion vectors (incl. Optical flow)
  - 3.2 Cut detection
  - 3.3 Shot transitions
  - 3.4 Camera operations
  - 3.5 Spatial geometries
  - 3.6 Scene analysis
  - 3.7 Selection of key frames
  - 3.8 Shot similarity
4. Audio Analysis
  - 4.1 Syntactical audio features
  - 4.2 Semantical audio features
  - 4.3 Signal analysis
  - 4.4 Audio cut detection
  - 4.5 Onset and offset
5. Applications
  - 5.1 Text Recognition
  - 5.2 Recognition of Silence
  - 5.3 Recognition of Music
  - 5.4 Newscast Recognition
  - 5.5 Recognition of Commercials
  - 5.6 Video Abstracting
6. MPEG-4
  - 6.1 Goals
  - 6.2 Scope
  - 6.3 Video and Image Encoding
  - 6.4 Encoder
  - 6.5 Composition of Scenes
  - 6.6 Scaling
  - 6.7 Synthetic Objects

6.8 Layered Networking Architecture

6.9 Error Handling

### Biographical Note:

**Dr. Stephan Fischer** is Chief Technology Officer at Mobile VideoCommunication AG (MVC) in Germany. Before that he has been senior researcher at GMD-IPSI in Darmstadt and assistant professor at TU Darmstadt. He studied computer science and business administration and got his PhD in 1997 from the University of Mannheim in the area of video and audio content processing. Dr. Fischer has published various papers with regard to content analysis and has held a number of tutorials on content processing. He has also served in different program committees, for example for ACM Multimedia 1998, 1999, 2000 (Program Chair), and 2001 where he is and was responsible for the area of content and coding.

## SEP30-E MULTIMEDIA MIDDLEWARE

SUNDAY, Sept. 30, 2001- 1:30pm-5:00 pm

### Authors:

<b>Frank Eliassen</b>	Simula Research Laboratory, NORWAY	<a href="mailto:frank@ifi.uio.no">frank@ifi.uio.no</a>
<b>Thomas Plagemann</b>	University of Oslo, NORWAY	<a href="mailto:plageman@ifi.uio.no">plageman@ifi.uio.no</a>

**Duration:** Half-day

**Level:** Introductory

### Intended audience:

The tutorial is intended for researchers and practitioners having knowledge on issues and requirements of multimedia computing and who needs an insight into state of the art in multimedia middleware and in current and approaching multimedia middleware research prototypes. The tutorial is also suitable for researchers on multimedia computing that will participate in the Workshop on Multimedia Middleware to be held in conjunction with ACM Multimedia'01, but who feel they need a better understanding of the concept of multimedia middleware to fully appreciate the workshop.

### Tutorial Overview:

The overall aim of the tutorial is to provide the participants with an appreciation of modern middleware technologies, with a focus towards recent developments in support of multimedia computing. More specifically, the tutorial has the following key objectives:

- To introduce the key characteristics of modern middleware platforms in general and OMG CORBA in particular
- To provide an understanding of multimedia requirements to middleware
- To review and discuss state of the art of CORBA based technologies for multimedia computing
- To describe and discuss key research projects addressing the shortcomings in the state of the art, highlighting the main approach in each case

### Tutorial outline:

**Part I** (approx 2 hours). Presented by Frank Eliassen

1. Introduction to middleware:  
Definition of middleware; different styles of middleware; focus on distributed objects
2. Introduction to CORBA:  
What is the OMG? The Common Object Request Broker Architecture (CORBA); alternative middleware technologies
3. Requirements to multimedia middleware
4. Existing technologies and standards for multimedia middleware, including:  
CORBA A/V streams and RT-CORBA

**Part II** (approx 2 hours) Presented by Thomas Plagemann

1. Multimedia middleware research prototypes (c.f. soft real-time):  
QuO, Agilos, LegORB
2. Real-time multimedia middleware research prototypes:  
Real-time CORBA/TAO, GOPI, omniORB
3. Open issues and future challenges

**Biographical Notes:**

**Frank Eliassen** is executive research director of Simula Research Laboratory, Oslo and professor of distributed systems at the University of Oslo. He is currently also an Adjunct Professor at the University of Tromsø in Norway. Eliassen has been conducting research in the area of distributed systems since 1983. His earlier research in this area focused on distributed heterogeneous object management (naming and persistence) and advanced transaction models for distributed systems, while his recent research contributions has been in the area of typing issues and interoperability of multimedia streams and multimedia binding frameworks for middleware. A recent paper on the latter topic was published at the ACM/IFIP sponsored conference Middleware'2000, New York, USA. He has published many papers in his field and has served as program committee member of many major international conferences and workshops in data engineering, distributed systems and multimedia. Eliassen has taught courses at graduate level on distributed object.-based middleware since 1991. He is currently teaching courses on distributed systems and object-based middleware at the University of Oslo, and on next generation middleware at the University of Tromsø (together with professor Gordon Blair).

**Dr. Thomas Plagemann** received his Diploma in Computer Science from the University Erlangen-Nurnberg (Germany) in 1990, and his Doctor of Technical Science from Swiss Federal Institute of Technology (ETH) Zurich (Switzerland) in 1994. In 1995, he was honoured with the Medal of the ETH Zurich for his doctoral thesis, in which he developed the Da CaPo communication subsystem. From 1994 to 1996 Thomas Plagemann was a researcher at UniK - Center of Technology at Kjeller and Telenor R&D (Norway). Since 1996, Thomas Plagemann is Professor at the University of Oslo. His research interests include multimedia middleware, protocol architectures, QoS, operating system support for distributed multimedia systems, and interactive distance learning. His recent research results in the area of multimedia middleware and operating system support will for example be published at IEEE OpenArch 2001 and IEEE INFOCOM 2001. In total, Thomas Plagemann has published 46 refereed papers in his field. He has lectured courses and seminars in the areas of communications, multimedia, operating systems, and distributed systems at the University of Oslo, the University of Tromsø, and for industry. Furthermore, he has given two successful tutorials on "Operating System Support for Multimedia Systems" at the international events IDMS'99 and ConTel'99.

**Day 2 Tutorials: MONDAY, October 1, 2001**

**OCT01-A MULTIMEDIA TECHNOLOGIES AND APPLICATIONS IN THE NEW INTERNET**

MONDAY, Oct.1, 2001, 8:30 am- 5:00 pm

**Author:**

**Nicolas D. Georganas**

University of Ottawa,  
CANADA

[georganas@mcrlab.uottawa.ca](mailto:georganas@mcrlab.uottawa.ca)

**Duration:** Full day

**Level:** Introductory

**Intended Audience:**

This tutorial is for beginners in multimedia and Internet technologies. Its objective is to present the state-of-the-art in multimedia enabling technologies, services and applications, over a variety of networks and protocols, with emphasis on the new wireless home and Internet world. At the end of the tutorial, the audience will be familiar with most of the basic Internet and home protocols and multimedia services and will have enjoyed some new applications of Virtual Reality in collaborative multimedia.

**Tutorial overview:**

The tutorial first presents a brief overview of multimedia applications and shows some video clips of emerging multimedia services. It then introduces the fundamental networking technologies used for multimedia services and discusses their problems. Particular emphasis is placed on the new Wireless Handheld, Home and Personal Area Networks and Protocols, such as Bluetooth, HomeRF and WAP. The basic video and audio compression technologies are presented, including the entire MPEG and H263 families, with emphasis on MPEG-2 and MPEG-4. Next, the Internet protocols are presented, as also new standards for Quality of Service provision on the Internet (IntServ, DiffServ). Fundamental e-security procedures and protocols are presented, as also new authentication and content protection procedures such as digital watermarking. The tutorial also demonstrates new multimedia applications in e-commerce, tele-collaboration, tele-training and tele-medicine using Collaborative Virtual Reality. In brief, it will cover the following multimedia topics, enhanced with video clips:

- Introduction, Applications
- Networking Technologies for multimedia (LAN, MAN, WLAN, HAN, WAN, ATM, IP)
- Multimedia to the home (DSL, cable, wireless,...)
- Image, Video and Audio Compression
- Multimedia Synchronization
- Multimedia and the Internet: IP and other protocols, QoS provision, Mobile IP, WAP.
- Multimedia conferencing and collaboration tools
- e-commerce and Security issues
- Digital Watermarking for Multimedia
- Virtual Reality and Collaborative Virtual Environments & applications

**Detailed Outline:**

PART I (morning):

**Introduction**

Recent history of multimedia technologies  
Business and home multimedia applications

**Networking Technology for Multimedia**

Local Area Networks (LAN):  
"legacy" LANs (Ethernet, Token Ring)  
FDDI, FDDI-II  
Switched Ethernet  
Isochronous Ethernet (IEEE 802.9)  
Fast Ethernet (100 Mbps)  
Gigabit Ethernet (IEEE 802.3z)

Wireless LANs and Wireless Personal Area Networks

IEEE 802.11  
Bluetooth  
IEEE 802.15  
HomeRF

Wide Area Networking (WAN)



Key WAN Services for Multimedia

Bridges and Routers

ATM Networking

Brief review of N-ISDN, B-ISDN , ATM.

Adaptation layer (AAL) for different ATM classes of service

ATM comparisons with other technologies

### **Multimedia to the Home**

Access Technologies: Telephone, DSL, Cable, Wireless cable

Fiber-in-the-loop, Fiber-to-the-home, Hybrid Fiber-coax

### **Digital Image, Video and Audio Compression in Multimedia Communications**

Compression needs in Multimedia

Video services, bandwidth and storage needs

Image and video coding standards: JPEG, MPEG-1, MPEG-2, MPEG-4, MPEG-7, H.263

Software Compression/Decompression

### **Multimedia Synchronization**

Basic synchronization concepts and methods

Synchronization Quality of Service (QoS) Parameters

Synchronized Multimedia Integration Language (SMIL)

PART II (afternoon)

### **Multimedia and the Internet**

OSI reference model

Internet Protocols: TCP, UDP, IP, IPv6

Mobile IP

Unicast, Broadcast, Multicast

Protocol requirements for multimedia

RSVP

Real Time Transport protocol (RTP, RTCP)

QoS provisioning over IP networks: IntServ, DiffServ

Internet telephony, Internet Fax

WWW, HTML, XML, Java

Real Time Streaming Protocol (RTSP)

Government concerns on Web usage

### **Wireless Internet and Wireless application Protocol (WAP)**

#### **Multimedia conferencing and collaboration tools**

Conferencing standards

Conferencing market evolution

Conferencing systems

Tele-collaboration tools

#### **e-Commerce and e-Security**

Cryptography

Public key Encryption

Secure Sockets Layer, SHTTP, IPSec, SMIME

Secure Electronic Transactions (SET)

Attacks on e-security

#### **Digital Watermarking for Multimedia**

Classification of watermarks

Image, video, audio and text watermarking techniques

#### **Virtual Reality as a new Medium**

Virtual Reality Modeling Language (VRML)

Java3D

Distributed Virtual Environments

High-Level Architecture (HLA) : A new OMG standard for distributed simulations

Applications in industrial training, e-commerce, tele-collaboration

### **Biographical Sketch:**

**Nicolas D. Georganas** is Canada Research Chair in Information Technology and Director of the Multimedia Communications Research Laboratory (MCRLab), School of Information Technology and Engineering, University of Ottawa, Canada. He has been leading multimedia application development projects since 1984 and has lectured on multimedia internationally. He was General Chair of the ACM Multimedia 2001 (Ottawa), IEEE Multimedia Systems'97 Conference (ICMCS97)(June 1997, Ottawa) and Technical Program Chair of the IEEE COMSOC MULTIMEDIA'89 (Montebello, Canada) and of the ICCM Multimedia Communications'93 Conference (Banff, Canada). He has served as Guest Editor of the IEEE Journal on Selected Areas in Communications, issues on "Multimedia Communications" (1990) and on "Synchronization Issues in Multimedia Communications" (1996). He is on the editorial boards of the journals Multimedia Tools and Applications, ACM/Springer Multimedia Systems, ACM Computing Surveys, Performance Evaluation, Computer Networks, Computer Communications, and was an editor of the IEEE Multimedia Magazine. He is a Fellow of IEEE, Fellow of the Canadian Academy of Engineering, Fellow of the Engineering Institute of Canada and Fellow of the Royal Society of Canada. In 1998, he was honored as the University of Ottawa Researcher of the Year and also received the University 150th Anniversary Gold Medal for Research. In 1999, he received the T.W.Eadie Medal of the Royal Society of Canada, funded by Bell Canada, for contributions to Canadian and International Telecommunications. In 2000, he received the J.C.Smith Medal of the Engineering Institute of Canada, the A.G.L.McNaughton Medal of IEEE Canada, the OCRI Presidents's Award, the Bell-Canada-Forum Award of the Corporate-Higher Education Forum, the TeleLearning Researcher Achievement Award and a Canada Research Chair.

## **OCT01-B SCALABLE MULTIMEDIA SERVERS**

MONDAY, Oct.1, 2001, 8:30 am – 12:00 pm

### **Author:**

**B. Prabhakaran**                      University of Texas at                      [praba@utdallas.edu](mailto:praba@utdallas.edu)  
Dallas, USA

**Level :** Intermediate.

### **Intended Audience :**

Professionals who are working or thinking in terms of working in the area of multimedia and Internet.

### **Tutorial Overview:**

Scalability is a very important issue in providing Internet services, especially in view of the explosive growth in the number of Web users. When using the phrase 'Internet services', we consider text as well as multimedia presentations over the Internet, since accessing video and audio have become an integral part of the Web browsing activity. While this task of scalability can be considered as one of finding the best server or resource, the key issue of interest here is providing such a service in a transparent manner to the client.

Scalability can also be in terms of the multimedia data format. For instance, MPEG series of standards offer multiple qualities of video as multiple independent bitstreams. This is achieved through the use of hierarchical coding process: a coarse representation or base layer is first constructed and then successive enhancements are provided.

This tutorial describes the strategies that can be employed for scalable multimedia servers on the Internet. First, we consider a transparent approach using Domain Name Server (DNS). After identifying the limitations of a pure DNS approach, we analyze the object redirection approach in the HTTP (hypertext transfer protocol). We then discuss commercial products (such as Local Director, NetDispatcher, Akamai) as well as research projects in providing scalable multimedia services on the Internet. Finally, we consider scalable data formats offered by MPEG series of standards and discuss how multimedia servers can make use of them effectively.

## **Tutorial Outline :**

The following topics will be discussed during the tutorial.

### 1. Introduction

We discuss the issues in web hosting and offering multimedia content on the Internet. We introduce concepts such as Domain Name Server (DNS) and HTTP (hypertext transfer protocol).

### 2. DNS Based Approaches

This approach uses a modified DNS to distribute incoming client requests to different servers in a round-robin manner or based on a weighted classification. This allocation of client requests is done at the time of name-to-IP address translation carried out by the DNS. We discuss different ways of using DNS-based approach for offering scalable multimedia services.

### 3. HTTP Based Approaches

HTTP (hypertext transfer protocol) offers object redirection services as part of its protocol. HTTP redirection can be combined with DNS-based approach too. We present the various ways in which scalable servers can be built using this approach.

### 4. Proxy Servers

Proxy servers cache objects from the main web servers, for delivering them to clients. Proxy servers help in alleviating the load on the main web servers. We present some approaches that can effectively use proxy servers along with the web servers.

### 5. Commercial Products and Research Projects

We analyze the features of commercial products such as Cisco's Local Director, IBM's NetDispatcher, Akamai. We also consider research projects and prototypes developed in this area.

### 6. Scalable Data Formats

Analysis of the characteristics of MPEG/MPEG-2 video. Profiles of MPEG-2 video, spatial and temporal scalability, and layers of MPEG-2 video stream. Use of the various layers of MPEG-2 encoded data for adapting to available resources.

### 7. Summary

We summarize the main issues in providing scalable multimedia services on the Internet and the solutions that can be used.

## **Biography notes:**

**Dr. B. Prabhakaran** is currently with the Department of Computer Science, University of Texas at Dallas. He is also associated with the faculty of Computer Science Department, National University of Singapore. Before that, he was a visiting research faculty with the Department of Computer Science, University of Maryland, College Park. He also served as a faculty in the Department of Computer Science, Indian Institute of Technology, Madras, India. Dr B. Prabhakaran has been working in the area of multimedia systems : multimedia databases, authoring & presentation, resource management, and scalable web-based multimedia presentation servers. He has published several research papers in prestigious conferences and journals in this area.

He has served as an Associate Chair of the ACM Multimedia'2000 (November 2000, Los Angeles) and ACM Multimedia'99 conference (Florida, November 1999). He has served as guest-editor (special issue on Multimedia Authoring and Presentation) for ACM Multimedia Systems journal. He is also serving on the editorial board of Multimedia Tools and Applications journal, Kluwer Academic Publishers. He has also served as program committee member on several multimedia conferences and workshops. He has presented tutorials in ACM Multimedia and other multimedia conferences. He has filed for three patents in the field of multimedia Internet servers and multimedia authoring. He has presented tutorials in ACM

Multimedia'98 and ACM Multimedia'99, ACM Multimedia'2000 on topics such as network resource management, adaptive multimedia presentations, and scalable multimedia servers. He has also presented tutorials in other multimedia conferences such as IDMS (International Conference on Distributed Multimedia Systems).

**OCT01-C OBJECT-ORIENTED MODELING OF MULTIMEDIA APPLICATIONS WITH UML -  
CANCELLED**

MONDAY, Oct.1, 2001, 8:30 am – 12:00 pm

**Authors:**

**Gregor Engels**

University of Paderborn,  
GERMANY

[engels@upb.de](mailto:engels@upb.de)

**Stefan Sauer**

[sauer@upb.de](mailto:sauer@upb.de)

**Duration:** Half-day

**Intended Audience:**

Researchers as well as practitioners (i.e. software developers) with some interest in multimedia software engineering, and particularly in modeling multimedia applications.

**Tutorial Overview:**

The tutorial presents an overview on the Unified Modeling Language (UML), discusses its appropriateness to model multimedia applications and gives a detailed overview on the state of the art of extensions to UML to model multimedia applications. The last topic covers also research and practical results of the tutorial speakers.

**Tutorial Description:**

Object-Oriented Modeling of Multimedia Applications with UML

**1. Motivation and Objectives**

In the beginning of the 90s, the great diversity of proposed object-oriented design notations and methods caused a lot of problems in the software development field. In particular, due to a lacking standardized approach, object-oriented models were hardly understandable by designers, who were not an expert of the used, specific notation. Therefore, existing object-oriented models were hardly reusable in projects where another notation has been chosen, and thus one of the main advantages of an object-oriented approach were extremely cut down. This created a strong motivation, particularly in industry, to standardize on a single object-oriented notation. In response, the Object Management Group (OMG) defined the Unified Modelling Language (UML), which it adopted in 1997 as its standard notation for object-oriented analysis and design.

While the UML was clearly successful in unifying the different graphical notations, it has been argued that it was less successful in providing a shared definition of the pragmatics and semantics behind the underlying concepts. In particular, the following issues have been noted:

- \* lack of clear guidelines on which aspects of a system are to be modelled by which diagram types,
- \* lack of heuristic, pragmatic guidelines on how these diagram types are to be actually used for the various aspects,
- \* lack of precise rules on how to transform a UML description into fragments of programming language code (e.g., Java) or GUI-builders, and, last but not least,
- \* lack of a precise meaning (semantics) of UML-based descriptions.

The working group of the tutorial speakers work since years in the field of object-oriented modelling techniques and currently particularly on UML. Specific research topics are the investigation of the usage of UML for the development of multimedia applications and embedded real-time systems. In particular, it has been investigated how UML can be used to model the internal functionality of a system as well as its external user interface. In addition, concepts have been developed on how to translate UML diagrams into corresponding Java code or GUI builders. In cooperation with industrial partners, UML has been deployed in real application scenarios which provided extensive experiences on how to use UML effectively within a soft-

ware development process.

Based on these research as well as practical experiences, the tutorial will provide the participants with

- \* an introduction into all UML diagram types,
- \* a consistent view on how to use UML to model various aspects of a system,
- \* an introduction into currently proposed UML extensions to model multimedia applications,
- \* an overall process model, which covers all phases from an early problem analysis up to an implementation.

It is intended that the participants will have understood all relevant language concepts of UML, that they are able to choose the right diagram type for specific modelling purposes and that they are able to model at least small multimedia applications with the presented extended version of UML.

### Contents:

Part 1: History of UML (G. Engels)

Part 2: UML Diagram Types (G. Engels)

Part 3: Unified Development Process (G. Engels)

Part 4: UML extensions for Multimedia Applications (St. Sauer)

Part 5: Code Generation (St. Sauer)

Part 6: Summary and Conclusions (G. Engels)

### Biographical Notes:

**Prof. Dr. Gregor Engels** has the chair for database and information systems at the University of Paderborn since 1997. He works since more than 10 years in the field of object-oriented modelling techniques. He gave tutorials on this topic at several national and international conferences (ESEC 91, ESEC 93, ICDE 93, ICDE 94, CAiSE'99, VL'99, FDL'2000, VL'2000), as well as industrial seminars for different companies in Germany. His research interests are object-oriented modelling concepts, process modelling techniques, and multimedia software engineering.

**Dipl.-Inform. Stefan Sauer** studied computer science at the University of Oldenburg. He received his diploma in computer science in 1997 and works as research assistant in the group of Prof. Engels since 1997. His research interests are extensions of UML for modeling of multi-media applications. He gives regularly industrial seminars on UML and Java.

## OCT01-D IP TELEPHONY

MONDAY, Oct. 1, 2001, 1:30 pm-5:00 pm

### Authors:

**Ralf Steinmetz**

Darmstadt Univ. of  
Technology, GERMANY

[Ralf.Steinmetz@KOM.tu-darmstadt.de](mailto:Ralf.Steinmetz@KOM.tu-darmstadt.de)  
[rac@KOM.tu-darmstadt.de](mailto:rac@KOM.tu-darmstadt.de)

**Ralf Ackermann**

**Duration:** Half-day

### Objectives:

IP-Telephony is a challenging new application area for the use of multimedia protocols and applications and influences research and deployment activities in a number of fields. For understanding and using it we need a knowledge covering basic network and QoS mechanisms, IP-Telephony specific protocols as well as the interactions with other components (such as

directory services, databases or providers for additional services). Within the tutorial we give a comprehensive overview - guiding the listener from the basic mechanisms towards the state of the art and current research topics.

### **Tutorial Overview:**

The tutorial will be structured as follows:

#### **\* Basic connectivity**

Audio sampling and coding, RTP streaming, network technologies and their impact, QoS support by adequate means (Over-Provisioning and Adequate Network Engineering/Traffic Management and/vs. Reservation or Dedicated Handling of Data Streams)

#### **\* IP-Telephony Signaling Protocols**

H.323 and SIP protocol family, features and limitations, interaction, future development, MGCP. An important part of the tutorial will cover gatewaying between the alternative protocols.

#### **\* Operation**

Management, Security Issues both for Privacy and Trust but also for the Interaction with Security Infrastructure components like Firewalls

#### **\* Value Added Services**

New communication paradigms and the trend towards a "Ubiquitous Seamless Communication" - we expect this to be the area with the largest potential once the "basic technical preconditions" are properly met. We will describe combinations of IP telephony services with Presence Services and Instant Messaging.

We end the tutorial with a "Primer for enabling IP-Telephony at your site" based on the experiences gathered during the pre-selection and evaluation of solutions for and in a larger scale Field Trial (Replacement of the PBX for the Darmstadt Scientific Institutions -comprising about 6000 telephones to be replaced and a planned and expected number of up to 2000 IP-phones).

### **Biographical Notes:**

**Ralf Steinmetz** is Professor at the Departments of "Electrical Engineering and Information Technology" and "Computer Science" at the Darmstadt University of Technology. His research group in multimedia communication was newly founded in 1996. Since then 18 researchers have joined the KOM staff. Since January 1997 he has been the Director of the GMD (German - National Research Center for Information Technology) institute IPSI (Integrated Publications- and Information Systems Institute) in Darmstadt. About 100 full time employees work at his GMD institute. In 1999 he founded the htcc (Hessian Telemedia Technology Competence Center) with focus on applied networked multimedia services being applied to education projects. He was among the core multimedia group which initiated the ACM/Springer Multimedia Journal and the IEEE Multimedia. He has served as editor and member of the editorial advisory board of several journals and as chair, vice chair, and member of numerous program and steering committees for workshops and conferences (recently as general co-chair of the ACM Multimedia'98 and chair of the itg/GI KIVS'99 -communications in distributed Systems'99 in Darmstadt. He wrote the first in-depth technical book on multimedia systems, recent version published in German in 2000; a co-authored and restructured edition in English published in 1995 (up-coming version by end of 2001).

**Ralf Ackermann** works as Scientific Staff member at the department KOM (Prof. Ralf Steinmetz) at Darmstadt University of Technology. He's doing a PhD on the field of IP telephony and deals with the topic of providing "Seamless Communication Services" by using signalling, media and value added services gateways. He also coordinates the IP telephony field trial for the Darmstadt scientific region.

### **OCT01-E SMIL2.0: THE NEXT WAVE OF MULTIMEDIA ON THE WEB**

MONDAY, Oct. 1, 2001, 1:30 pm-5:00 pm

**Author:**

Lloyd Rutledge

CWI, The Netherlands

[Lloyd.Rutledge@cwi.nl](mailto:Lloyd.Rutledge@cwi.nl)

**Duration:** Half-day

**Intended Audience:**

The tutorial is intended for content developers who have created HTML documents or have used tools such as Macromedia Director or Authorware. Multimedia designers, web-page creators, creators of interface prototypes such as user interface designers, human factors practitioners and industrial designers will also benefit from this course. It can also be followed usefully by participants unfamiliar with existing tools and environments. The level is introductory and expects knowledge of the Web at a user's level, not necessarily that of an HTML author. Familiarity with basic HTML constructs is desirable, though not necessary.

**Objectives:**

The goal of the tutorial is to explain the concepts that form the basis of the SMIL language and to provide sufficient detail on the language itself so that participants can create their own simple presentations. Participants will also understand the underlying issues of temporal and spatial layout and the complexity of creating links within multimedia. They will also be able to use available tools to play and create SMIL presentations.

**Tutorial Overview:**

SMIL 2.0 specifies interactive multimedia on the Web. It will be released soon as a W3C recommendation, but is already the subject of much attention from major players. This version extends SMIL 1.0, a W3C recommendation since June 1998. SMIL 1.0 already has a major presence on the Web as the integration format for the RealPlayer media browser. It also is supported by QuickTime 4.1, the GRiNS editor and player, and several other players. This tutorial presents SMIL 1.0 and 2.0 and the tools for them.

**Description:**

SMIL 1.0 is a W3C recommendation, approved in June 1998 and now a strong presence on the Web, which provides a vendor-independent, declarative language for hypermedia presentations on the Web. With at least three players currently available, and with more and more presentations being posted on the Web, SMIL promises to do for interactive multimedia what HTML did for hypertext: bring it into every living room with an easy-to-author, readily implementable format and easily accessible players for it.

SMIL 2.0 is nearing completion and is expected to be released by the W3C in the coming months -- in time for Multimedia 2001. The specification document is 10 times the size of SMIL 1.0, offering many new, rich features and constructs. SMIL 2.0 also has the backing of major industrial players, such as Microsoft, RealNetworks and Macromedia.

Before describing the details of the SMIL language, the tutorial first presents an overview of the components required in a hypermedia document description language. The SMIL language includes features for specifying the media items included in a document, referred to with URL's, how these are temporally and spatially related to one another, and how links can be specified within the multimedia environment. Alternates for different data formats for the heterogeneous web environment are also provided.

The goal of the tutorial is to explain the concepts that form the basis of the SMIL language and to provide sufficient detail on the language itself so that participants can create their own simple presentations. Participants will also understand the underlying issues of temporal and spatial layout and the complexity of creating links within multimedia. The tutorial also describe the use of the major SMIL implementations: the RealPlayer, the GRiNS authoring environment, and HTML+SMIL on Internet Explorer.

**Biographical Notes:**

**Lloyd Rutledge** is a researcher at CWI. His research involves adaptable hypermedia, and standards for it such as SMIL. He

received his Sc.D. from the University of Massachusetts Lowell, where he worked with the Distributed Multimedia Systems Laboratory (DMSL) on developing the HyOctane HyTime-based hypermedia environment. Dr. Rutledge is a member of the W3C working group that developed SMIL. He has given this SMIL tutorial at many venues including WWW10, WWW9 and WWW8, ACM Multimedia 99, Multimedia Modeling 2000 and ACM Hypertext 2000, 99 and 98. He is also co-author of "SMIL: Multimedia on the Web", to be published this year by Pearson Education.



**This document is not available for the moment.**

# ACM Multimedia 2001

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The final version of your paper should be prepared in two versions: a camera-ready paper version for the printed proceedings and an electronic version for the electronic proceedings.

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Based on the category of your paper, your final version for printed proceedings is limited to the following number of pages:

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After you have submitted the final version for the printed proceedings, you should prepare the electronic version for the electronic proceedings. The due date is September 3rd, 2001.

- [Instructions for preparing electronic version of your paper](#)

The electronic proceedings will have the same look and feel as those of MM98 and MM99, MM00 but we will be asking authors to use validated HTML 4.0 (strict) with a CSS2 style sheet which we supply. The instructions explain this process, give an example of a simple markup and show the effect of the style sheet. They also tell you what to submit and where to ftp your file. If you need further help after reading the instructions, contact the electronic proceedings editors [Vincent Oria](mailto:Vincent Oria) at [oria@homer.njit.edu](mailto:oria@homer.njit.edu) or Roger Price at [rprice@cs.uml.edu](mailto:rprice@cs.uml.edu).

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Instructions for

## POSTER PRESENTATIONS

Dear ACM MM 2001 poster author:

I write this note to provide information on the poster session of ACM MM 2001 conference. Please read the instructions and prepare your presentation accordingly.

The poster session is scheduled for 7:00 pm to 11:00 pm on Tuesday, October 2, 2001, in the Ballroom of the Fairmont Chateau Laurier. The concurrent Welcome reception ensures a steady flow of audience throughout the session.

Poster boards will be delivered there from 6:00 to 6:30 pm and the room will be open to you from 6:30-7 pm. You will be provided with a poster board space of size 4 ft x 4 ft (approximately 120 cm by 120 cm) for your poster pages. It is up to you how you would want to place your slides on the board. Be sure to estimate how many sheets you can fit on the board and prepare your presentation accordingly. Note that if you have too many sheets, you will not be able to fit them on the board.

There will be a numbered board that is assigned to your presentation. We will use the same numbers as listed on the program at <http://www1.acm.org/sigs/sigmm/MM2001/>

Please check at the Conference Registration Desk for last minute instructions.

When the session is over, at 11 pm, please remove your posters from the board, which will be then taken away.

If you need any other information, please see the conference website, or send an e-mail to [golshani@asu.edu](mailto:golshani@asu.edu).

Best wishes! Looking forward to seeing you at the conference.

Forouzan Golshani

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Maintained by [Dwight Makaroff](#)  
Last updated: *Tuesday August 7, 2001.*



# Registration

## Conference Registration

- [Registration form \(PDF\)](#)

## Hotel Information

- *Conference hotel*



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- *Westin hotel*



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For other accommodations, see [www.ottawa.com](http://www.ottawa.com)

## Airline Information

Please note that ACM has secured an Airline agreement with Air Canada, for the attendees of the MM'01 conference. The following URL indicates the details of this agreement so that the attendees may benefit from the

discount: [http://www.acm.org/sig\\_volunteer\\_info/aircanada.html](http://www.acm.org/sig_volunteer_info/aircanada.html).

# Final Program



International Conference on Multimedia

**September 30 - October 5, 2001**

Fairmont Chateau Laurier  
**Ottawa, Canada**



**Sponsored by**

**the ACM Special Interest Groups**

**SIGMM, SIGGRAPH, and SIGCOMM**



Because of a 3000 persons NATO conference in Ottawa, during the same week as ACM MM2001, it is STRONGLY advised that you make your Hotel reservations by July 31, 2001, and by no means later than Aug. 31, 2001, else you risk commuting to Ottawa from Montreal (120 miles)!!

- [SCHEDULE](#)
- [TECHNICAL PROGRAM](#)
- [WORKSHOPS](#)
- [DEMONSTRATIONS](#)
- [POSTERS/SHORT PAPERS](#)

- [DOCTORAL SYMPOSIUM](#)
- [TUTORIALS](#)

## WELCOME MESSAGE FROM THE CHAIRS!

Welcome to the 9th ACM Multimedia Conference, held Sept. 30-Oct.5, 2001 in Ottawa, Ontario, the capital city of Canada. This beautiful city is often called "Silicon Valley North" because of the high concentration of major telecommunications and software companies, such as NORTEL, ALCATEL, CISCO, MITEL, COREL, COGNOS, JDS Uniphase, Entrust and many others. The conference complements this setting by presenting and exploring technological and artistic advancements in multimedia. Technical issues, theory and practice, artistic and consumer innovations will bring together researchers, artists, developers, educators, performers, and practitioners of multimedia. This conference is sponsored by NTT, ALCATEL, HP, Fuji-Xerox Palo Alto Laboratory, the Association for Computing Machinery (ACM) and its special interest groups SIGMM, SIGGRAPH, and SIGCOMM.

The conference would not have been a success without help from so many people who have our special thanks. We thank the members of the Technical Program Committee; each one spent countless hours finding experts to review submitted papers, reviewing papers themselves, and helping us select the very best papers. We also thank the paper reviewers who generously spent many hours reviewing papers and providing valuable feedback to the authors. We received over 280 paper submissions and accepted only 45 of them—an acceptance rate of approximately 16%.

We also thank: Forouzan Golshani and all reviewers of the poster paper program who did an excellent job in selecting 22 short papers, from approximately 61 submissions (in addition, the conference Program Committee selected 13 papers from the pool of long papers submitted to be modified for poster presentation; bringing the total number of short papers to 35), presented during the conference reception as part of a focus on research-in-progress; Kien Hua who assembled a set of 22 exciting demonstrations of Multimedia technology; S. (Panch) Panchanathan who organized a very impressive program with 10 tutorials on cutting edge topics.

Brigitte Kerhervé did a tremendous job of selecting three outstanding workshops on emerging topics. Tamer Özsü organized an exciting plenary panel and Ketan Mayer-Patel did again a wonderful job of organizing this year's doctoral symposium. Vincent Oria did a splendid job in chasing the authors and organizing the papers for the proceedings. Roger Price has been working on the electronic proceedings since 1997.

A number of people deserve special thanks for helping with the logistics of the conference. Dwight Makaroff, and François Malric acted as webmasters and ensured that all information pertaining to the conference was available in a timely manner. Michael Vernick spent again much effort in promoting the conference as Publicity Chair. Lisette Burgos, Maritza Nichols, Ann Ferrara and Irene Frawley of ACM played multiple roles in providing valuable assistance. Terry D'Angelo and Marilyn Cheek of OCRI provided invaluable assistance with all the local arrangements and registration, as also did many student volunteers from the University of Ottawa organized by Mojtaba Hosseini. Ersal Aslam and Kenneth Ronkowitz of NJIT Media Services designed the nice proceedings cover.

Lastly, Larry Rowe, the ACM SIGMM Chair, has provided so much valuable assistance with the planning and operation stages of the conference. We are very much in debt to his guidance and leadership for this conference.

### General Chairs

Nicolas D. Georganas, Univ. of Ottawa  
Radu Popescu-Zeletin, GMD Fokus

### Technical Program Chairs

Tzi-cker Chiueh, SUNY Stony Brook  
Wolfgang Klas, Univ. of Vienna  
Aidong Zhang, SUNY Buffalo

<b>ACM MULTIMEDACIA 2001</b>						
Ottawa, Canada • September 30 to October 5, 2001						
	Sunday September 30	Monday October 1	Tuesday October 2	Wednesday October 3	Thursday October 4	Friday October 5
7:30 - 17:00	<b>Registration</b> <i>Mezzanine Balcony</i>	<b>Registration</b> <i>Mezzanine Balcony</i>	<b>Registration</b> <i>Drawing Foyer</i>	<b>Registration</b> <i>Drawing Foyer</i>	<b>Registration</b> <i>Drawing Foyer</i>	<b>Registration</b> <i>Mezzanine Balcony</i>
8:00						<b>Workshops</b>
8:30 – 10:00	<b>Tutorials</b> <i>Gatineau, Burgundy &amp; L'Orangerie</i>	<b>Tutorials</b> <i>Gatineau, Burgundy &amp; L'Orangerie</i>	<b>Opening Plenary And Keynote</b> <i>Drawing</i>	<b>Plenary Panel</b> <i>Drawing</i>	<b>Technical Sessions</b> <i>Drawing Laurier</i>	<i>Renaissance, MacDonald &amp; Quebec</i>
10:00 – 10:30	<b>Coffee Break</b>	<b>Coffee Break</b>	<b>Coffee Break</b>	<b>Coffee Break</b>	<b>Coffee Break</b>	<b>Coffee Break</b>
10:30 – 12:00	<b>Tutorials</b> <i>Gatineau, Burgundy &amp; L'Orangerie</i>	<b>Tutorials</b> <i>Gatineau, Burgundy &amp; L'Orangerie</i>	<b>Technical Sessions</b> <i>Drawing &amp; Laurier</i>	<b>Technical Sessions</b> <i>Drawing &amp; Laurier</i>	<b>Technical Sessions</b> <i>Drawing &amp; Laurier</i>	<b>Workshops</b> <i>Renaissance, MacDonald &amp; Quebec</i>
12:00 – 13:30	<b>Lunch Break</b>	<b>Lunch Break</b>	<b>Lunch Break</b>	<b>Conference Lunch</b> <i>Adam</i>	<b>Lunch Break</b>	<b>Lunch Break</b>
12:30 – 13:30			<b>ACM SIGMM Meeting</b> <i>Drawing</i>		<b>ACM/Springer MM Sys.J. Editorial Board</b> <i>Drawing</i>	
13:30 – 15:00	<b>Tutorials</b> <i>Gatineau, Burgundy</i>	<b>Tutorials</b> <i>Gatineau, Burgundy</i>	<b>Technical Sessions</b> <i>Drawing &amp; Laurier</i>	<b>Technical Sessions</b> <i>Drawing &amp; Laurier</i>	<b>Doctoral Symposium</b> <i>Drawing</i>	<b>Workshops</b> <i>Renaissance,</i>



	<i>&amp; L'Orangerie</i>	<i>&amp; L'Orangerie</i>				<i>MacDonald &amp; Quebec</i>	
15:00 – 15:30	<b>Coffee Break</b>	<b>Coffee Break</b>	<b>Coffee Break</b>	<b>Coffee Break</b>	<b>Coffee Break</b>	<b>Coffee Break</b>	
15:30 – 17:00	<b>Tutorials</b> <i>Gatineau, Burgundy &amp; L'Orangerie</i>	<b>Tutorials</b> <i>Gatineau, Burgundy &amp; L'Orangerie</i>	<b>Technical Sessions</b> <i>Drawing &amp; Laurier</i>	<b>Technical Sessions</b> <i>Drawing &amp; Laurier</i>	<b>Doctoral Symposium</b> <i>Drawing &amp; Laurier</i>	<b>Workshops</b> <i>Renaissance, MacDonald &amp; Quebec</i>	
18:00 – 18:30		<b>IEEE Multimedia Magazine Editorial Board Meeting</b> <i>Burgundy</i>	<b>Poster Set up</b> <i>Ballroom</i>	<b>ACM MM2002 Organizing Meeting</b> <i>Burgundy</i>	<b>Conference Banquet</b> <i>Grand Hall Museum of Civilization</i>	<b>ACM MM2001 Closing &amp; Torch Passing Meeting</b> <i>Burgundy</i>	
18:30 – 19:00							
19:00 – 20:00				<b>Welcome Reception &amp; Posters</b> <i>Ballroom</i>			
20:00 – 21:30							
21:30 – 23:00							
<b>Internet Café – Frobisher – 8:00 – 18:00</b>							
<b>Demos</b> <i>MacDonald 9:00 – 19:00</i>				<b>Demos</b> <i>MacDonald 09:00 – 16:00</i>			

## TUTORIALS

SUNDAY, SEPTEMBER 30, 2001

8:30 am - 5:00 pm MPEG-7: PUTTING IT ALL TOGETHER (*Gatineau Room*)  
Adam T. Lindsay, Ed Hartley, Cédric Thiénot  
Lancaster University, UK and Expway, France

8:30 am - 12:00 pm WIRELESS SOFTWARE DESIGN FOR HANDHELD DEVICES (*Burgundy Room*) - **CANCELLED**  
Qusay H. Mahmoud  
Simon Fraser University, Canada

8:30 am - 12:00 pm PRACTICAL DIGITAL LIBRARIES OVERVIEW (*L'Orangerie Room*) **CANCELLED**  
Edward A. Fox  
Virginia Tech, USA

1:30 pm - 5:00 pm CONTENT ANALYSIS AND CODING OF DIGITAL AUDIO AND VIDEO (*L'Orangerie Room*)  
Stephan Fischer  
Mobile Video Communication (MVC), Germany

1:30 pm - 5:00 pm MULTIMEDIA MIDDLEWARE (*Burgundy Room*)  
Frank Eliassen and Thomas Plagemann  
University of Oslo, Norway

MONDAY, OCTOBER 1, 2001

8:30 am - 5:00 pm MULTIMEDIA TECHNOLOGIES & APPLICATIONS IN THE NEW INTERNET (*L'Orangerie Room*)  
Nicolas D. Georganas  
University of Ottawa, Canada

8:30 am - 12:00 pm SCALABLE MULTIMEDIA SERVERS (*Gatineau Room*)  
B. Prabhakaran  
University of Texas at Dallas, USA

8:30 am - 12:00 pm OBJECT-ORIENTED MODELING OF MULTIMEDIA APPLICATIONS WITH UML - **CANCELLED** (*Burgundy Room*)  
Gregor Engels and Stefan Sauer  
University of Paderborn, Germany

1:30 pm - 5:00 pm IP TELEPHONY (*Gatineau Room*)  
Ralf Steinmetz and Ralf Ackermann  
Darmstadt University of Technology, Germany

1:30 pm - 5:00 pm SMIL2.0: THE NEXT WAVE OF MULTIMEDIA ON THE WEB (*Burgundy Room*)  
Lloyd Rutledge  
CWI, The Netherlands

## TECHNICAL PROGRAM

ORAL PRESENTATIONS

TUESDAY, OCTOBER 2, 2001

8:30 am - 10:00 am Opening Plenary and Keynote (*Drawing Room*)  
Chair: Nicolas D. Georganas

*Welcome*

Nicolas D. Georganas, Radu Popescu-Zeletin, General Conference Chairs

*TeleExperience: Communicating Compelling Experience*

Ramesh Jain, Co-founder and CTO, PRAJA inc., San Diego, USA

10:00 am - 10:30 am Coffee Break

10:30 am - 12:00 pm Session 1: Video Applications (*Drawing Room*)  
Chair: Frank Nack, CWI, The Netherlands

*Building an Intelligent Camera Management System*

Yong Rui, Liwei He, Anoop Gupta, Qiong Liu

Microsoft Research, Seattle, USA

*Improvising Camera Control for Capturing Meeting Activities Using a Floor Plan*

Shingo Uchihashi

Fuji Xerox Co., Ltd., Japan

*Design of a Virtual Auditorium*

Milton Chen

Stanford University, USA

Session 2: Video Processing (*Laurier Room*)

Chair: Wolfgang Effelsberg, University of Mannheim, Germany

*Multimedia Edges: Finding Hierarchy in all Dimensions*

Malcolm Slaney, Dulce Ponceleon, James Kaufman

IBM Almaden Research Center, USA

*Motion-based Segmentation and Contour-based Classification of Video Objects*

Gerald Kuehne, Stephan Richter, Mark Beier

University of Mannheim, Germany

*On Clustering and Retrieval of Video Shots*

Chong-Wah Ngo, Ting-Chuen Pong, Hong-Jiang Zhang

Microsoft Research, China

12:00 pm - 1:30 pm Lunch Break

1:30 pm - 3:00 pm Session 3: Streaming-I (*Drawing Room*)  
Chair: Martin Mauve, University of Mannheim, Germany

*Stream Enhancements for the CORBA Event Service*

Desmond Chambers, Gerard Lyons, Jim Duggan

National University of Ireland, Galway, Ireland

*Efficient and Scalable On-Demand Data Streaming Using UEP Codes*

Lihao Xu

Washington University, St. Louis, USA

*Optimal Delivery of Multimedia Content over Networks*

Arthur D. Allen

Burst. Com, San Francisco, USA

Session 4: Image Retrieval (*Laurier Room*)

Chair: James Z. Wang, Penn State University, USA

*Adaptive Nearest Neighbor Search for Relevance Feedback in Large Image Databases*

P. Wu, B. S. Manjunath

University of California, Santa Barbara, USA

*Extraction of Feature Subspaces for Content-Based Retrieval Using Relevance Feedback*

Zhong Su, Stan Li, Hongjiang Zhang

Microsoft Research, China

*Support Vector Machine Active Learning for Image Retrieval*  
Simon Tong, Edward Chang  
University of California, Santa Barbara, USA

3:00 pm - 3:30 pm Coffee Break

3:30 pm - 5:00 pm Session 5: Video Retrieval and Browsing (*Drawing Room*)  
Chair: Nevenka Dimitrova, Philips Research, USA

*Learning Video Browsing Behavior and Its Application in the Generation of Video Previews*  
Tanveer Syeda-Mahmood, Dulce Ponceleon  
IBM Almaden Research Center, USA

*Multimedia Retrieval through Spatio-Temporal Activity Maps*  
Gopal Pingali, Agata Opalach, Ingrid Carlbom  
Bell Labs, Lucent Technologies, USA

*Comparing Discriminate Transformations and SVM for Learning during Multimedia Retrieval*  
Xiang Sean Zhou, Thomas S. Huang  
University of Illinois at Urbana-Champaign, USA

Session 6: Streaming-II (*Laurier Room*)  
Chair: Thomas Plogemann, University of Oslo, Norway

*Server-Based Smoothing of Variable Bit-Rate Streams*  
Stergios V. Anastasiadis, Kenneth C. Sevcik, Michael Stumm  
University of Toronto, Canada

*Distributing Media Transformation over Multiple Media Gateways*  
Wei Tsang Ooi, Robbert van Renesse  
Cornell University, USA

*ReMDoR: Remote Multimedia Document Retrieval over Partial Order Transport*  
Phillip T. Conrad, Armando Caro, Paul D. Amer  
Temple University, USA

### WEDNESDAY, OCTOBER 3, 2001

8:30 am - 10:00 am Plenary Panel Session (*Drawing Room*)  
Moderators: Savitha Srinivasan, Dulce Ponceleon  
IBM Almaden Research Center

*Is streaming media becoming mainstream?*

Panelists:  
Dick Bulterman, Oratrix Development  
Edward Delp, Purdue University  
Alexandros Eleftheriadis, Flavor Software, Inc.  
Pablo Fericola, Microsoft  
Rob Lanphier, RealNetworks  
See-Mong Tan, Apple Computer, Inc.

10:00 am - 10:30 am Coffee Break

10:30 am - 12:00 pm Session 7: Audio Processing (*Drawing Room*)  
Chair: Stephan Fischer, MVC, Germany

*Pause Concepts for Audio Segmentation at Different Semantic Levels*  
Silvia Pfeiffer  
CSIRO, Macquarie University, Australia

*A Compressed Domain Beat Detector Using MP3 Audio Bitstreams*  
Ye Wang, Miikka Vilermo  
Nokia Research Center, Finland

*A Robust Audio Classification and Segmentation Method*  
Lie Lu, Hao Jiang, HongJiang Zhang  
Microsoft Research, China

Session 8: Network Games (*Laurier Room*)  
Chair: Prashnat Shenoy, University of Massachusetts, USA

*Modelling User Behavior in Network Games*

Tristan Henderson, Saleem Bhatti  
University College London, UK

*Consistency Control in Distributed Interactive Media*

Jürgen Vogel, Martin Mauve  
University of Mannheim, Germany

*Coordinated CPU and Event Scheduling for Distributed Multimedia Applications*

Christian Poellabauer, Karsten Schwan, Richard West  
Georgia Tech, USA

12:00 pm - 1:30 pm Conference Lunch (*Adam Room*)

1:30 pm - 3:00 pm Session 9: Authoring Support (*Drawing Room*)

Chair: Lynda Hardman, CWI, The Netherlands

*DEMAIS: Designing Multimedia Applications with Interactive Storyboards*

Brian P. Bailey, Joseph A. Konstan, John V. Carlis  
University of Minnesota, USA

*Designing Annotation Before It's Needed*

Frank Nack, Wolfgang Putz  
CWI, The Netherlands  
GMD-IPSI, Germany

*Automatic Detection of 'Goal' Segments in Basketball Videos*

Surya Nepal, Uma Srinivasan, Graham Reynolds  
CSIRO Mathematical and Information Sciences, Australia

Session 10: Video Storage (*Laurier Room*)

Chair: Lihao Xu, Washington University, USA

*System Support for Providing Integrated Services from Networked Multimedia Storage Servers*

Ravi Wijayarathne, A. L. Narasimha Reddy  
Texas A & M University, USA

*Periodic Broadcast and Patching Services - Implementation, Measurement, and Analysis in an Integrated Streaming Video Testbed*

Michael K. Bradshaw, Bing Wang, Subhabrata Sen, Lixin Gao, Jim Kurose, Prashant Shenoy  
University of Massachusetts, Amherst, USA

*Bandwidth Allocation in a Self-Managing Multimedia File Server*

Vijay Sundaram, Prashant Shenoy  
University of Massachusetts, Amherst, USA

3:00 pm - 3:30 pm Coffee Break

3:30 pm - 5:00 pm Session 11: Coding and Encryption (*Drawing Room*)

Chair: Yong Rui, Microsoft Research, USA

*On Error Preserving Encryption Algorithms for Wireless Video Transmission*

Ali Saman Tosun, Wu-chi Feng  
Ohio State University, USA

*Scene Context Dependent Rate Control*

Anthony G. Nguyen, Jenq-Neng Hwang  
The Boeing Company, USA  
University of Washington, USA

*An Image Watermarking Technique Using Pyramid Transform*

Qiang Cheng, Thomas S. Huang  
University of Illinois at Urbana-Champaign, USA

Session 12: Exploiting Video (*Laurier Room*)

Chair: Susanne Boll, University of Vienna, Austria

*Panoramic Video Capturing and Compressed Domain Virtual Camera Control*

Xinding Sun, Jonathan Foote, Don Kimber, B. S. Manjunath

University of California, Santa Barbara, USA

*FlyAbout: Spatially Indexed Panoramic Video*

Don Kimber, Jonathan Foote, Surapong Lertsithichai  
Xerox, Palo Alto, USA

*Spatially Encoded Far-Field Representations for Interactive Walkthroughs*

Andrew Wilson, Ketan Mayer-Patel, Dinesh Manocha  
University of North Carolina, Chapel Hill, USA

6:30 pm – 9:30 pm Conference Banquet (*Grand Hall, Canadian Museum of Civilisation*)

**THURSDAY, OCTOBER 4, 2001**

8:30 am - 10:00 am Session 13: Industrial Session (*Drawing Room*)

Chair: Tzi-cker Chiueh, State University of New York at Stony Brook, USA

*Computer Technologies that Support Kansei Expression Using the Body*

Ryohei Nakatsu, Makoto Tadenuma, Tadao Maekawa  
ATR Media Integration and Communication Research Laboratories, Japan

*The Virage Video Understanding and Publishing System*

Bradley Horowitz  
Virage, USA

*Audio/Video Authoring Techniques Using SMIL 2.0*

Rob Lanphier  
Real Networks, USA

Session 14: Media Processing (*Laurier Room*)

Chair: Rainer Lienhart, Intel, USA

*Speech-driven Cartoon Animation with Emotions*

Feng Yu, Yan Li, Yingqing Xu, Eric Chang, Heung-Yeung Shum  
Microsoft Research, China

*Scalable Streaming of JPEG2000 Images Using Hypertext Transfer Protocol*

Sachin Deshpande, Wenjun Zeng  
Sharp Laboratories of America, Inc., USA

*Exploring Benefits of Non-Linear Time Compression*

Liwei He, Anoop Gupta  
Microsoft Research, Seattle, USA

10:00 am - 10:30 am Coffee Break

10:30 am - 12:00 pm Session 15: Multimedia processing (*Drawing Room*)

Chair: Dulce Ponceleon, IBM Almaden Research Center, USA

*Bi-level Video: Video Communication for Very Low Bandwidth Networks*

Jiang Li, Gang Chen, Jizheng Xu, Yong Wang, Hanning Zhou, Keman Yu, King To Ng, Heung Yeung Shum  
Microsoft Research, China

*Hierarchical Filtering Method for Content-based Music Retrieval via Acoustic Input*

Jyh-Shing Roger Jang, Hong-Ru Lee  
National Tsing Hua University, Taiwan

*Supporting Audiovisual Query Using Dynamic Programming*

Milind R. Naphader, Roy Wang, Thomas S. Huang  
University of Illinois at Urbana-Champaign, USA

Session 16: Voice over IP (*Laurier Room*)

Chair: Wu-chi Feng, Ohio State University, USA

*A Conference Gateway Supporting Interoperability between SIP and H.323*

Peter Steenkiste, Jia-Cheng Hu, Jiann-Min Ho  
Carnegie Mellon University, USA

*Real-time Voice Communication over the Internet Using Packet Path Diversity*

Yi J. Liang, Eckehard Steinbach, Bernd Girod  
Stanford University, USA

*Intra-Flow Loss Recovery and Control for VoIP*  
Henning Sanneck, Nguyen Tuong Long Le, Adam Wolisz, Georg Carle  
GMD Fokus, Germany

12:00 pm - 1:30 pm      Lunch Break

1:30 pm - 5:00 pm      Doctoral Symposium (*Drawing Room*)  
Chair: Ketan-Mayer-Patel

*Creating an Immersive Broadcast Experience*  
Marcelle A. Steinstra  
Twente University

*An Integrated Framework for Interactive Multimedia  
Presentations in Distributed Multimedia Systems*  
Ramazan Savas Aygun  
SUNY – Buffalo, USA

3:00 pm – 3:30 pm      **Coffee Break**

*Media Transcoding for Pervasive Computing*  
Zhijun Lei  
University of Ottawa, Canada

*Supporting QoS for Ubiquitous Multimedia Service Delivery*  
Yi Cui  
University of Illinois at Urbana-Champaign, USA

*Priority-Progress Streaming for Quality-Adaptive Multimedia*  
Charles 'Buck' Krasic  
Oregon Graduate Institute, USA

## POSTERS/ SHORT PAPERS

Tuesday, October 2, 2001 (*Ballroom*) 7:00 pm - 11:00 pm

*Spatial Navigation of Media Streams*  
Steele Arbeeney, Deborah Silver  
Rutgers University, USA

*Middle-Tier for Multimedia Synchronization*  
Ramazan Savas Aygun, Aidong Zhang  
State University of New York at Buffalo, USA

*Similarity Queries in the DISIMA Image DBMS*  
Vincent Oria, M. Tamer Özsu, Shu Lin, Paul J Iglinski  
New Jersey Institute of Technology, USA  
University of Waterloo, Canada  
IBM Toronto Laboratories, Canada  
University of Alberta, Canada

*Classification of Summarized Videos using Hidden Markov Models on Compressed Chromaticity Signatures*  
Cheng Lu, Mark S. Drew, James Au  
Simon Fraser University, Canada

*SVG for Navigating Digital News Video*  
Michael G. Christel, Huang Chang  
Carnegie Mellon University, USA

*Subband Image Segmentation Using VQ for Content Based Image Retrieval*  
Junchul Chun, George Stockman  
Kyonggi University, Korea  
Michigan State University, USA

*Robust Digital Image Watermarking Using DWT, DFT and Quality Based Average*  
Eduardo Fullea, José M. Martínez  
Universidad Politécnica de Madrid, Spain

*Experiences with MPEG-4 Multimedia Streaming*

Hassan Shojania, Baochun Li  
ATI Technologies, Inc., USA  
University of Toronto, Canada

*An Integrated Framework for Face Modeling, Facial Motion Analysis and Synthesis*

Pengyu Hong, Zhen Wen, Thomas Huang  
University of Illinois at Urbana Champaign, USA

*LinStar Texture: a Fuzzy Logic CBIR System for Textures*

Hsin-Chih Lin, Chih-Yi Chiu, Shi-Nine Yang  
Chang Jung Christian University, Taiwan  
National Tsing Hua University, Taiwan

*Combined-Media Video Tracking for Summarization*

Jianying Hu, Jialin Zhong, Arnit Bagga  
Avaya Labs Research, USA

*Fast Client-Server Video Summarization for Continuous Capture*

John Dixon, Charles B. Owen  
Michigan State University

*Indexing for Efficient Processing of Noise-Free Queries*

Khanh Vu, Kien A. Hua, JungHwan Oh  
University of Central Florida

*Content-Sensitive Video Streaming Over Low Bitrate and Lossy Wireless Network*

Kun Tan, Richard Ribier, Shih-Ping Liou,  
Tsinghua University, China  
Siemens Corporate Research, USA

*A Practical Approach for modeling the quality of multimedia data*

Kwan-Sang Na, Doo-Kwon Baik, Pan-Koo Kim  
Korea Telecom, Korea  
Korea University, Korea  
Chosun University, Korea

*Ubiquitous Media Agents for Managing Personal Multimedia Files*

Liu Wenyin, Zheng Chen, Lin Fan, Yang Rui, Mingjing Li, Hongjiang Zhang  
Microsoft Research China

*Visual Query Tools for Uncertain Spatio-Temporal Data*

Katherine Malan, Gary Marsden, Edwin Blake  
University of Cape Town, South Africa

*Affect Computing in Film through Sound Energy Dynamics*

Simon Moncrieff, Chitra Dorai, Svetha Venkatesh  
Curtin University of Technology, USA  
IBM T. J. Watson Research Center, USA

*Preemptive Bandwidth Allocation Protocol for Multicast, Multi-Streams Environments*

Nawel Chefai, Nicolas D. Georganas, Gregor V. Bochmann  
University of Ottawa, Canada

*Image Indexing & Retrieval Using Intermediate Features*

Mohamad Obeid, Bruno Jedynak, Mohamed Daoudi  
Telecom Lille 1, France  
USTL de Lille, France

*A Tele-Immersive, Virtual Laboratory Approach based on Real-Time Streaming of 3D Scene Sequences*

Stephan Olbrich, Helmut Pralle  
University of Hannover, Germany

*A New Approach for Rotated Face Detection*

Qiang Zhu, Jiashi Chen  
Zhejiang University, China

*Authoring and Execution Environments for Multimedia Applications Featuring Robotic Actors*

Nikitas M. Sgouros, Sophia Kousidou  
University of Piraeus, Greece

*FIRM: Fuzzily Integrated Region Matching for Content-based Image Retrieval*

Yixin Chen, James Z. Wang, Jia Li  
Pennsylvania State University, USA

*Integrated Broadband Environment for Personalized TV Experience (IBEX) – Implementation Study and Practice*  
Yoshihisa Gonno, Fumihiko Nishio, Tomohiro Tsunoda, Yasuaki Yamagishi, Sony Corporation, Japan

*Mitigating Impact of Starting New Session in Zoned Disk*  
Youjip Won, Kyeongsun Cho, Seung-Min Park  
Hangyang University, Korea  
ETRI, Korea

*A New Foreground Extraction Scheme for Video Streams*  
Zhengping Wu, Chun Chen  
Zhejiang University, China

*Automated Authoring of Coherent Multimedia Discourse in Conversation Systems*  
Michelle X. Zhou, Shimei Pan,  
IBM T.J. Watson Research Center, USA

*Model-based Face and Lip Animation for Interactive Virtual Reality Applications*  
M.D. Bondy, Emil M. Petriu, Marius D. Cordea, Nicolas D. Georganas, Dorina C. Petriu, Thomas E. Whalen  
University of Ottawa, Canada  
Carleton University, Canada  
Communications Research Centre, Canada

*Personalizing Video Recorders using Multimedia Processing and Integration*  
Nevenka Dimitrova, Radu Jasinschi, Lalitha Agnihotri, John Zimmerman, Thomas McGee  
Philips Research, USA

*Digital Audio Watermarking Based-on Multiple-bit Hopping and Human Auditory System*  
Changsheng Xu, Yongwei Zhu, David Dagan Feng,  
University of Sydney, Australia  
Kent Ridge Digital Labs, Singapore

*Motion Based Object Tracking In MPEG-2 Video Stream For Perceptual Region Discrimination Rate Transcoding*  
Javed I. Khan, Zhong Guo, Wansik Oh  
Kent State University, USA

*Automated Basis-View and Match-Point Selection for the ArchVision RPC Image-based Model*  
Charles S. Carpenter, W. Brent Seales, Christopher Jaynes, Randall Stevens  
University of Kentucky, USA  
ArchVision, USA

*Technique for Eliminating Irrelevant Terms in Term Rewriting for Annotated Media Retrieval*  
Youngchoon Park, Forouzan Golshani, Sethuraman Panchanathan, Pankoo Kim  
Roz Software Systems, USA  
Arizona State University,  
Chosun University, Korea

*The Evolutionary Sound Synthesis Method*  
Jônatas Manzolli, Adolfo Maia, Jose Fornari, Furio Damiani,  
University of Campinas, Brazil

## **DEMONSTRATIONS**

*MacDonald Room*

Tuesday, October 2, 9:00 am - 7:00 pm

Wednesday, October 3, 9:00 am – 4:00 pm

*Software Systems for Virtual University Operations*  
Timothy K. Shih  
Tamkang University, Taiwan

*Interactive Media on Demand: Generic Recording and Replay of Interactive Media Streams*  
Volker Hilt, Martin Mauve, Jurgen Vogel, Wolfgang Effelsberg  
University of Mannheim, Germany

*Demonstration of A Distributed MPEG-7 Video Search and Retrieval Application in the Educational Domain*  
Mark van Setten, Erik Oltmans  
Telematica Instituut, Netherlands

*Portrait Video Phone*  
Jiang Li, Gang Chen, Keman Yu, Yong Wang, Kaibo Wang, Jizheng Xu, Hanning Zhou, King To Ng, Lijie Wang, Heung Yeung Shum  
Microsoft Research, China

*Content-based Retrieval Applications on a Common Database Management System*



Naoko Kosugi, Go Nishimura, Junji Teramoto, Kazuyoshi Mii, Makoto Onizuka, Seiichi Kon'ya, Akira Kojima, Ryoji Kataoka, Takashi Honishi,  
Kazuhiko Kushima  
NTT Cyberspace Labs, Japan

*A Flexible Image Retrieval and Multimedia Presentation Management System for Multimedia Databases*  
Shu-Ching Chen, Mei-Ling Shyu, Xia Jin, Qiong Chen, Chengcui Zhang  
Florida International University, USA  
University of Miami, USA

*A Broadband Web-based Application for Video Sharing and Annotation*  
Bruno Emond, Martin Brooks, Arnold Smith  
National Research Council of Canada, Canada

*vCOM: Virtual Commerce in a Collaborative 3D World*  
Xiaojun Shen, Saeid Nourian, Isabelle Hertanto, Nicolas Georganas  
University of Ottawa, Canada

*Java Multimedia Telecollaboration*  
Jauvane C. de Oliveira, Francois Malric, Dongsheng Yang, Saeid Nourian, Nicolas D. Georganas  
University of Ottawa, Canada

*Demonstration of Improved Multimedia Streaming by Using Content-Aware Video Scaling*  
Avanish Tripathi, Mark Claypool  
Worcester Polytechnic Institute, USA

*PBIR: Perception-Based Image Retrieval – A System that Learns Subjective Image Query*  
Edward Chang, Kwang-Ting Cheng, Larry Lai, Beita Li, Tony Wu, Yi-Leh Wu  
University of California, USA

*Indexing and Retrieval of 3D Models Aided by Active Learning*  
Cha Zhang, Tsuhan Chen  
Carnegie Mellon University, USA

*Resource Adaptive Netcentric Systems: A Case Study with SONET - A Self-Organizing Network Embedded Transcoder*  
Javed I. Khan, Seung S. Yang, Qiong Gu, Darsan Patel, Patrick Mail, Oleg Komogortsev, Wansik Oh, Zhong Guo  
Kent State University, USA

*Collaborative Virtual Environments for Training*  
Majtaba Hosseini, Nicolas D. Georganas  
University of Ottawa, Canada

*Real-Time Personalized Sports Video Filtering and Summarization*  
Di Zhong, Raj Kumar, Shih-Fu Chang  
Columbia University, USA

*MEPG-LMRP: Implementing Adaptive Streaming of MPEG Videos for Interactive Internet Applications*  
S Boll, W. Klas, M. Menth, C. Heinlein  
University of Vienna, Austria  
University of Wuerzburg, Germany  
University of Ulm, Germany

*SARI: Self-Authentication-and-Recovery Image Watermarking System*  
Ching-Yung Li, Shih-Fu Chang  
IBM T.J. Watson Research Center, USA  
Columbia University, USA

*IMKA: A Multimedia Organization System Combining Perceptual and Semantic Knowledge*  
Ana B. Benitez, Shih-Fu Chang, John R. Smith  
Columbia University, USA  
IBM T. J. Watson Research Center, USA

*Universal Tuner: A Video Streaming System for CPU/Power-Constrained Mobile Devices*  
Richard Han, Ching-Yung Lin, John Smith, Belle Tseng, Vida Ha  
IBM T. J. Watson Research Center, USA

*ELM-N: E-Learning Media Navigator*  
Chitra Dorai, Parviz Kermani, Avare Stewart  
IBM Thomas J. Watson Research Center USA

*Super Mbox: An Efficient/Effective Content-based Music Retrieval System*  
Jyh-Shing Roger Jang, Hong-Ru Lee, Jiang-Chun Chen  
National Tsing Hua University, Taiwan

*Periodic Broadcast and Patching Services - Implementation, Measurement, and Analysis in an Internet Streaming Video Testbed*  
 Michael K. Bradshaw, Bing Wang, Subhabrata Sen, Lixin Cao, Jim Kurose, Prashant Shenoy, Don Towsley  
 University of Massachusetts, USA

## WORKSHOPS

Friday, October 5, 2001

WORKSHOP 1: MULTIMEDIA INFORMATION RETRIEVAL (*Renaissance Room*)

8:00 am - 8:10 am Opening Session

8:10 am - 9:10 am Session 1: Indexing and Searching  
 Chair: K. Selcuk Candan

*Similarity Search in Metric Databases through Hashing*  
 Claudio Gennaro, Pasquale Savino, Pavel Zezula  
 IEI-CNR Italy  
 Mazarik University, Czech Republic

*Parallel Traversal of Signature Trees for Fast CBIR*  
 Aaron Davidson, John Anvik, Mario A. Nascimento  
 University of Alberta, Canada

*Spatial Relationship Modeling and Indexing for XML Multimedia Data Retrieval*  
 Byungwoo Kim, Venu Chakilam, Jong P. Yoon  
 University of Louisiana at Lafayette, USA

9:10 am - 10:10 am Session 2: Searching and Information Extracting  
 Chair: Noburu Babaguchi

*Alternating Feature Spaces in Relevance Feedback*  
 Fang Qian, Mingjing Li, Wei-Ying Ma, Fuzong Lin, Bo Zhang  
 Tsinghua University, China  
 Microsoft Research China

*Multimedia Information Services Enabling: An Architectural Approach*  
 Erik Boertjes, Willem Jonker, Jeroen Wijnands  
 KPN Research, Netherlands

*Automatic Location of Text in Video Frames*  
 Xian-Sheng Hua, Xiang-Rong Chen, Liu Wenyin, Hong-Jiang Zhang  
 Microsoft Research China

10:10 am - 10:30 am Coffee Break

10:30 am - 11:30 pm Session 3: Image Retrieval I  
 Chair: Henning Mueller

*A Novel Region-Based Image Retrieval Method Using Relevance Feedback*  
 Feng Jing, Bo Zhang, Fuzong Lin, Wei-Ying Ma, Hong-Jiang Zhang  
 Tsinghua University, China  
 Microsoft Research China

*Support Vector Machine Pairwise Classifiers with Error Reduction for Image Classification*  
 Kingshy Goh, Edward Chang, and Kwang-Ting Cheng  
 University of California at Santa Barbara, USA

*Shaped-Based Image Retrieval by Spatial Topology Distances*  
 Hsin-Chang Yang  
 Chang-Jung University, Taiwan

11:30 am - 12:30 pm Session 4: Image Retrieval II  
 Chair: Edward Chang

*A Statistical Correlation Model for Image Retrieval*  
 Mingjing Li, Zheng Chen, Liu Wenyin, Hong-Jiang Zhang  
 Microsoft Research China

*Fast Image Indexing Based on JPEG2000 Packet Header*  
 Chuping Liu, Mrinal.K.Mandal

University of Alberta, Canada

*A Web-Based Evaluation System for Content-Based Image Retrieval*

Henning Mueller, Wolfgang Mueller, Stephane Marchand-Maillet,  
David Squire, Thierry Pun  
University of Geneva, Switzerland  
Monash University, Australia

12:30 pm - 2:00 pm Lunch

2:00 pm - 3:00 pm Invited Talk  
Chair: K. Selcuk Candan

*Multimedia IR in Context*

Sharon Flank, CTO & VP-Technology, eMotion, Inc.

3:00 pm - 3:20 pm Coffee Break

3:20 pm - 4:40 pm Session 5: Video Retrieval  
Chair: Mario Nascimento

*Segmentation of Goods Video Based on Video Caption*

S.Takao, Y.Ariki and H.Matsumoto  
Ryukoku University, Japan  
Sumitomo Electric Industry Co., Japan

*Feature Extraction and Content Analysis for Sports Videos Annotation*

J. Assfalg, M. Bertini, C. Colombo, A. Del Bimbo  
University of Florence, Italy

*Detection of Identical Events from Broadcasted Sports Video by Comparing Camera Works*

Yukinobu Yasugi, Noboru Babaguchi, Tadahihiro Kitahashi  
Osaka University, Japan

*An Attribute Based News Video Indexing*

Ichiro Ide, Reiko Hamada, Shuichi Sakai, Hidehiko Tanaka  
National Institute of Informatics, Japan  
University of Tokyo, Japan

4:40 pm - 5:00 pm Closing Session

WORKSHOP 2: MULTIMEDIA MIDDLEWARE (*MacDonald Room*)

8:00 am - 8:15 am Welcome Address

Thomas Plagemann and Frank Eliassen  
University of Oslo, Norway

8:15 am - 9:15 am Session 1: Opportunities and Challenges for Future Research Activities  
Chair: Larry Rowe

*Invited talks with representatives from NSF and DARPA*

9:15 am - 10:00 pm Session 2: Streaming Services  
Chair: Frank Eliassen

*A Proxy Architecture for Collaborative Media Streaming*

Verena Kahmann, Lars Wolf  
University of Karlsruhe, Germany

*Streaming Media Middleware is more than Streaming Media*

Lawrence A. Rowe  
University of California at Berkeley, USA

10:00 am - 10:30 am Coffee Break

10:30 am - 12:00 pm Session 3: QoS Middleware  
Chair: Xiaohui Gu

*Towards Integrated Runtime Solutions in QoS-aware Middleware*

Baochun Li, Dongyan Xu, Klara Nahrstedt

University of Toronto, Canada,  
University of Illinois at Urbana-Champaign, USA

*Controlling Quality-of-Service in a Distributed Video Application by an Adaptive Middleware Framework*

David A. Karr, Craig Rodrigues, Joseph P. Loyall, Richard E. Schantz  
BBN Technologies, USA

*A Dynamically-Configured, Strategic QoS Management Hierarchy for Distributed Multimedia Systems*

Denise Ecklund, Vera Goebel, Thomas Plagemann, Earl F. Ecklund, Jr.  
University of Oslo, Norway

*The Case for Using Middleware to Manage Diverse Soft Real-Time Schedulers*

John Regehr, Jay Lepreau  
University of Utah, USA

12:00 pm - 1:30 pm Lunch

1:30 pm - 3:00 pm Session 4: Configuration and Flexibility

Chair: Vera Goebel

*Towards Automatically Configurable Multimedia Applications*

Hani Naguib, George Coulouris  
Cambridge University, United Kingdom

*Reifying Communication at the Application Level*

Andrew P. Black, Jie Huang, Jonathan Walpole  
Oregon Graduate Institute of Science & Technology, USA

*Towards Support for Ad-Hoc Multimedia Bindings*

Hans Ole Rafaelsen, Frank Eliassen  
University of Tromsø, Norway  
University of Oslo, Norway

*Middleware for High-Performance Multimedia Services*

Mauricio Cortes, J. Robert Ensor  
Bell Labs, USA

3:00 pm - 3:30 pm Coffee Break

3:30 pm - 4:45 pm Session 5: Position Statements

Chair: Thomas Plagemann

*Infopipes for Composing Distributed Information Flows*

Rainer Koster, Andrew P. Black, Jie Huang, Jonathan Walpole, Calton Pu  
University of Kaiserslautern, Germany  
Oregon Graduate Institute, USA  
Georgia Institute of Technology, USA

*Multimedia Middleware for the Future Home*

Reinhard Baier, Christian Gran, Angela Scheller, Andreas Zisowsky  
GMD Fokus, Germany

*A Framework for Caching Multimedia Objects in the Internet*

Roy Friedman, Roman Vitenberg  
Technion - Israel Institute of Technology, Israel

*A CORBA Based Platform as Communication Support for Synchronous Collaborative Virtual Environment*

Stephane Louis Dit Picard, Samuel Degrande, Christophe Gransart, Gregory Saugis, Christophe Chaillou  
Université des Sciences et Technologies de Lille, France  
France Télécom R&D, France

*Coordinating Energy-Aware Adaptation of Multimedia Applications and Hardware Resources*

Wanghong Yuan, Klara Nahrstedt, Xiaohui Gu  
University of Illinois at Urbana-Champaign, USA

*An Event-Driven, User-Centric, QoS-aware Middleware Framework for Ubiquitous Multimedia Applications*

Xiaohui Gu, Klara Nahrstedt Gu  
University of Illinois at Urbana-Champaign, USA

*The Implementation of Middleware Services for QoS-aware Distributed Multimedia Applications*

Fabio Panzieri, Marco Rocchetti, Vittorio Ghini  
Università di Bologna, Italy

*Dynamic Data Path Reconfiguration*

Carsten Griwodz, Michael Zink  
University of Oslo, Norway  
Darmstadt University of Technology, Germany

*A Model-Based Service Creation Platform*

Wouter B. Teeuw, Dick A.C. Quartel  
Telematics Institute, The Netherlands,  
University of Twente, The Netherlands

4:45 pm - 5:00 pm Summary and Closing Remarks

Thomas Plagemann, Frank Eliassen  
University of Oslo, Norway

WORKSHOP 3: MULTIMEDIA AND SECURITY: NEW CHALLENGES (*Quebec Room*)

8:00 am - 8:15 am Welcome and Introduction to the Workshop

Jana Dittmann  
GMD-IPSI, Germany

8:15 am - 9:15 am Session 1: Digital Watermarking Approaches I

Chair: Klara Nahrstedt

*On Multiple Watermarking*

Nicholas Paul, Sheppard Reihaneh, Safavi-Naini, Philip Ogunbona  
Motorola Australia Research Centre, Australia

*A Compressed-Domain Watermarking Algorithm for MPEG Layer 3,  
Aspects of Security Infrastructures: Digital Certificates*

D. K. Koukopoulos, Y. C. Stamatiou  
Patras University, Greece

*Public Watermark Detection – A Framework and the Optimal Detector*

Trista Pei-chun Chen, Tsuhan Chen  
Carnegie Mellon University, USA

9:15 am - 9:55 am Session 2: Digital Watermarking Approaches II

Chair: Jana Dittmann

*Watermarking Security Enhancement Using Filter Parametrization in Feature Domain*

M. A. Suhail, M. M. Dawoud  
King Fahd University of Petroleum and Minerals, Saudi Arabia

*Watermarking Techniques Using the Drawing Exchange Format (DXF) File*

Kab Il Kim, Hwan Soo Kang  
Myongji University, South Korea

9:55 am - 10:10 am Coffee Break

10:10 am - 10:50 am Session 2: Digital Watermarking Approaches II (cont.)

*A New Technique for Authentication of Image/Video for Multimedia Applications*

Chih-Hsuan Tzeng, Wen-Hsiang Tsai  
National Chiao Tung University, Taiwan

*Future Directions*

Fred Baker (invited)  
Cisco Systems, USA

10:50 am - 11:50 am Session 3: Steganographical Approaches

Chair: Petra Wohlmacher

*Reliable Detection of LSB Steganography in Color and Grey Scale Images*

Jessica Fridrich, Miroslav Goljan, Rui Du (invited)  
SUNY Binghamton, USA

*Towards Robust Hidden Watermarking Using Multiple Quasi-Circles*

Veena Sridhar, Xiaobo Li, Mario A. Nascimento  
University of Alberta, Canada

*Steganographic Capacity of Images, Based on Image Equivalence Classes*  
Klaus Hansen, Christian Hammer, Jens D. Andersen, Lars R. Randleff  
University of Copenhagen, Denmark

11:50 am - 1:30 pm Lunch Break

1:30 pm - 2:50 pm Session 4: Applications I  
Chair: Rüdiger Grimm

*From Pay TV to Pay Streaming – Similarities and Differences*  
Jörg Schwenk, Tobias Martin, Erik Neumann (invited)  
T-Nova GmbH, Technologiezentrum, Germany  
Media Transfer GmbH, Germany

*PlataJanus: An Audio Annotation Watermarking Framework*  
Martin Steinebach, Jana Dittmann, Claus Vielhauer  
GMD-IPSI, Germany  
PLATANISTA GmbH, Germany

*A Secure Fingerprint-Based User Authentication for Lotus Notes*  
Nalini K. Ratha, Jonathan H. Connell, Ruud M. Bolle  
IBM Research, USA

*A Flexible Content and Context-based Access Control Model for Multimedia Medical Image Database Systems*  
Sofia Tzelepi, George Pangalos  
Aristotelian University, Greece  
Computer and Technology Institute (CTI) and Patras Universtiy, Greece

2:50 pm - 3:30 pm Coffee Break

3:30 pm - 4:30 pm Session 5: Applications II  
Chair: Jörg Schwenk

*Security Requirements for Internet Voting*  
Rüdiger Grimm (invited)  
Ilmenau Technical University, Germany

*Securing the First Steps into a New Exciting Multimedia World*  
Matthias Hollick  
GMD-IPSI, Germany

*Tamper Resistant Software: Extending Trust into a Hostile Environment*  
J. R. Nickerson, S. T. Chow, H. J. Johnson  
Cloakware Corporation, Canada

4:30 pm - 5:00 pm Summary and Closing Remarks

Jana Dittmann, Petra Wohlmacher, Klara Nahrstedt  
GMD-IPSI, Germany  
University of Klagenfurt, Austria  
University of Illinois at Urbana Champaign, USA

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Noboru Babaguchi, Osaka University

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**WORKSHOP 2:**

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Frank Eliassen, University of Oslo

**WORKSHOP 3:**

Jana Dittmann, GMD-IPSI Germany

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	<i>Before August 31</i>	<i>After August 31</i>	<i>Before August 31</i>	<i>After August 31</i>	
Conference Fee (includes 1 lunch, reception, banquet & proceedings)	\$450.00	\$550.00	\$550.00	\$650.00	
Conference Fee - student (member & non-member)	\$200.00	\$225.00	\$200.00	\$225.00	
Full Day Tutorials:					
▶ SEP30-A - MPEG-7: Putting it all together	\$400.00	\$450.00	\$500.00	\$550.00	
▶ OCT01-A - Multimedia Technologies & Applications in the new Internet	\$400.00	\$450.00	\$500.00	\$550.00	
Half Day Tutorial (morning):					
▶ SEP30-B- Wireless Software Design for Handheld Devices	\$250.00	\$275.00	\$275.00	\$325.00	
▶ SEP30-C- Practical Digital Libraries Overview	\$250.00	\$275.00	\$275.00	\$325.00	
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▶ OCT01-C- Object-Oriented Modeling of Multimedia Applications with UML	\$250.00	\$275.00	\$275.00	\$325.00	
Half Day Tutorial (afternoon):	\$250.00	\$275.00	\$275.00	\$325.00	
▶ SEP30-D- Content Analysis and Coding of Digital Audio and Video	\$250.00	\$275.00	\$275.00	\$325.00	
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▶ OCT01-E- SMIL2.0: The Next Wave of Multimedia on the Web	\$250.00	\$275.00	\$275.00	\$325.00	
Workshop (Select one: _____)	\$100.00	\$100.00	\$120.00	\$120.00	
Workshop, student (ACM member & non-member)(Select: _____)	\$ 80.00	\$ 80.00	\$ 80.00	\$ 80.00	
Additional Options (available only with Full Conference Registration):					
Additional Banquet Ticket - Wednesday October 3, 2001	\$65.00	\$65.00	\$65.00	\$65.00	
Additional Conference Proceedings in CD Format	\$20.00	\$20.00	\$30.00	\$30.00	
Additional Conference Proceedings in Hard Copy	\$95.00	\$95.00	\$120.00	\$120.00	
			Sub total		
			+ 7% GST**		
			Total		

**\*\*all conference delegates must pay the 7% GST Canadian Tax + 7% GST\*\***

Send completed registration form to :

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 Attention: Marilyn Cheek • OCRI • 36 Steacie Drive • Ottawa, Ontario CANADA K2K 2A9  
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 Visit the ACM Multimedia 2001 website at <http://www.acm.org/sigmm/MM2001/>





# Hotel Information

## Conference hotel

The world-reknown Canadian landmark, the *Chateau Laurier Hotel*, has been chosen as the site and host hotel of ACM Multimedia 2001. The following information is intended to allow conference participants to arrange their accomodation needs accordingly.

Guests can call the hotel directly at 613-241-1414, fax at 613-562-7031, call the Global Reservations Center at 1-800-441-1414 (Canada and US only) or email the Chateau at "[clh.reservations@fairmont.com](mailto:clh.reservations@fairmont.com)". In all cases, you must refer to "Association for Computing Machinery" in order to get the preferred rates.

A block of guestrooms has been secured at the Chateau Laurier Hotel from September 29 up to and including Friday October 5, 2001. The block of rooms have been allocated in the following categories:

Category	Rate per night
<i>Canadian Pacific</i>	\$192.00 (~USD \$125)
<i>Canadian Deluxe</i>	\$202.00 (~USD \$130)

Additionally, the following categories are also available:

Category	Rate per night
<i>Pacific Premier</i>	CAD \$232.00 (~USD \$150)
<i>Entrée Gold</i>	CAD \$272.00 (~USD \$175)

These rates are single and/or double occupancy; a third person (adult) sharing in any of the above room categories is an additional CAD \$20.00 (~USD \$12.50) per night. Children 18 years of age and under sharing their parents' accommodation are complimentary. Taxes at %12 total are extra.

Please note these rates reflect the "European Plan" (accommodation only - no meals) and are net non-commissionable to travel agents.

These rates can be extended (subject to availability) two days before the contracted room block (i.e. - September 27 and 28) and two after the contracted room (i.e. October 6 and 7).

## Hotel address:

**Fairmont Chateau Laurier**

1 Rideau Street  
Ottawa, Ontario K1N 8S7

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A block of rooms has also been reserved at the nearby [Westin Hotel](#), at \$225 (~US 150) plus taxes.

**[The Westin Hotel](#)**

11 Colonel By Drive  
Ottawa, Ontario  
K1N 9H4

+1(613) 560-7000 - main phone number for Hotel

+1(613) 560-2707 - fax number for the reservations department

email for reservations is: [ottawa@Westin.com](mailto:ottawa@Westin.com)

The room block will be held until September 14, 2001.

For other accommodations, see [www.ottawa.com](http://www.ottawa.com)