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ACM MULTIMEDIA'95  
November 5-9, 1995  
Hyatt Regency (Embarcadero)  
San Francisco, CA

THE THIRD ACM INTERNATIONAL MULTIMEDIA CONFERENCE AND EXHIBITION

Sponsored by the ACM SIGMM, SIGCHI,  
SIGGRAPH, SIGBIT, SIGBIO, SIGCOMM, SIGIR, and SIGOIS

In cooperation with SIGAPP, SIGCAPH, SIGMOD, and SIGOPS

ADVANCE PROGRAM

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Technical Program At a Glance

Tuesday November 7

7:00 am - 4:00 pm

Registration

8:45 am - 10:30 am

1. Conference Opening & Plenary

11:00 am - 12:30 pm

2A. Video Indexing and Retrieval

2B. Supporting Collaboration Environments

2P. The Information Superhighway: Electronic Democracy or Electronic Tranquilizer?

12:30 pm - 2:00 pm

Lunch Break

2:00 pm - 3:30 pm

3A. Cyber Communities

3B. Multimedia Storage Servers

3P. Curriculum, Education and Training about Multimedia

4:00 pm - 5:30 pm

4A. Authoring Flexible Documents

4B. Video Processing

4P. Multimedia on a Shoestring: Low Bandwidth Implementations

7:00 pm - 10:00 pm

Off-site conference reception, Yerba Buena Art Center

Wednesday November 8

7:00 am - 4:00 pm

Registration

9:00 am - 10:30 am

5A. Speech and Audio Interfaces

5D. Demonstrations: Networked Video

5P. Personal Narrative Spaces

11:00 am - 12:30 pm

- 6A. Multimedia Network Tools
- 6D. Demonstrations: Video-Centric Information Systems
- 6P. User Interface Challenges of Multimedia Design

12:30 pm - 2:00 pm

Lunch Break

2:00 pm - 3:30 pm

- 7A. Video and Image Collections
- 7D. Demonstrations:Enabling Hardware and Software
- 7P. Multimedia Museums and Cultural Learning

4:00 pm - 5:30 pm

- 8A. Multimedia Networking
- 8D. Demonstrations: Video Indexing
- 8P. Multimedia and Education: Magic, Myth or Miracle Cure?

7:00pm - 10:00 pm

Interactive Demonstrations

Thursday November 9

7:00 am - 4:00 pm

Registration

9:00 am - 10:30 am

- 9A. Video in Hypermedia
- 9B. Synchronization... it's about Time
- 9P. What's that Character Doing in Your Interface?

11:00 am - 12:30 pm

- 10A. Learning with MultiMedia
- 10B. Media Encoding
- 10P. Panel: Broadband Data Services to the Home

12:30 pm - 2:00 pm

Lunch Break

2:00 pm - 3:00 pm

11. Award Papers

3:30 pm - 5:15 pm

12. Plenary & Closing

## TECHNICAL PROGRAM

Tuesday, November 7

8:45 am - 10:30 am

1. Opening Plenary  
Silicon Snake Oil: What Multimedia is Offering  
Speaker: Clifford Stoll

Clifford Stoll is the bestselling author of "The Cuckoo's Egg", the story of how he tracked and eventually caught a German spy ring operating over the Internet. Involved with computer networks since their inception, Cliff is widely known both online and off -- as astronomer, computer security expert, and network maven. Despite this, Cliff admits to being "deeply ambivalent" about the information highway.

11:00 am - 12:30 pm

## 2A. Video Indexing and Retrieval

Video parsing, retrieval and browsing: An integrated and content-based solution

H.J. Zhang, C.Y. Low, S.W. Smoliar and D. Zhong, National University of Singapore

An intuitive and efficient access interface to real-time incoming video based on automatic indexing

Yukinobu Taniguchi, Akihito Akutsu, Yoshinobu Tonomura and Hiroshi Hamada, NTT Human Interface Laboratories, Japan

Automatic content-based retrieval of broadcast news

M. G. Brown, J. T. Foote, G. J. F. Jones, K. Sparck Jones and S. J. Young, Olivetti Research Limited and Cambridge University, UK

## 2B. Supporting Collaboration Environments

Dealing with timing variability in the playback of interactive session recordings

Nelson R. Manohar and Atul Prakash, University of Michigan

Multimedia application sharing in a heterogeneous environment

Klaus H. Wolf, Konrad Froitzheim and Peter Schulthess, University of Ulm, Germany

Automating envisionment of virtual meeting room histories

Allen Ginsberg and Sid Ahuja, AT&T Bell Laboratories

## 2P. Panel: The Information Superhighway: Electronic Democracy or Electronic Tranquilizer?

Chair: Barbara Simons, IBM Almaden

Events are moving so rapidly with respect to the Information Superhighway or National Information Infrastructure (NII) that it's almost impossible to write an abstract dealing with policy issues several months in advance of an event. Laws are being proposed (as of this writing, the Exon Amendment has been incorporated into the Telecommunications Bill, but the final vote has not yet been taken), books are being written by authors with very diverse views such as Clifford Stoll and Nicholas Negroponte, large sums of money are being invested, and major pronouncements are being made. Yet the terms of the discussions tend to be vague. How does the Internet relate to this yet-to-be-defined NII? Who will have access and to what? How will it be used? What are the potential abuses and how will we be protected from them?

This panel will discuss current policy issues and concerns. We hope to have considerable input from the audience.

2:00 pm - 3:30 pm

## 3A. Cyber Communities

The Jupiter audio/video architecture: secure multimedia in network places

Pavel Curtis, Michael Dixon, Ron Frederick and David A. Nichols, Xerox PARC

Low disturbance audio for awareness and privacy in media space applications

Ian Smith and Scott E. Hudson, Georgia Institute of Technology

Visual Who: Animating the affinities and activities of an electronic community

Judith S. Donath, MIT Media Lab

### 3B. Multimedia Storage Servers

Disk farms vs. storage hierarchies for video service

Ann L. Chervenak, David A. Patterson and Randy H. Katz, Georgia Institute of Technology and University of California, Berkeley

Using rotational mirrored declustering for replica placement in a disk-array-based video server

Ming-Syan Chen, Hui-I Hsiao, Chung-Sheng Li and Philip S. Yu, IBM Thomas J. Watson Research Center

Efficient support for scan operations in video servers

Prashant J. Shenoy and Harrick M. Vin, University of Texas at Austin

### 3P. Panel: Curriculum, Education and Training about Multimedia

Chair: Ed Fox, Virginia Polytechnic Institute and State University

There is a growing demand for people with knowledge and skills in the areas of multimedia information, systems, and technology. Universities are just beginning to help in this regard, and a curriculum effort by SIGMM may be in order to provide guidance and support. This panel will lead a discussion with the audience regarding when and how to develop such a curriculum, dealing with issues such as:

At what level should courses be offered (senior, graduate, ...);

Should such courses be taught by CS, Arts, Communications, or other disciplines

--- or by interdisciplinary teams;

What are the needs of industry --- research, development --- that should be concentrated upon;

What courseware, toolkits, demonstrations, online resources, textbooks, projects, etc. can assist with education.

4:00 pm - 5:30 pm

### 4A. Authoring Flexible Documents

Multimedia documents with elastic time

Michelle Y. Kim and Junehwa Song, IBM T.J. Watson Research Center

Commands as media: design and implementation of a command stream

Jonathan L. Herlocker and Joseph A. Konstan, University of Minnesota

Control layer primitives for the layered multimedia data model

Michael J. Wynblatt and Gary Schloss, SUNY at Stony Brook

### 4B. Video Processing

A resolution independent video language

Jonathan Swartz and Brian C. Smith, Cornell University

A robust method for detecting cuts and dissolves in video sequences

Kevin Mai, Justin Miller and Ramin Zabih, Cornell University

Multiple perspective interactive video

Patrick H. Kelly, Arun Katkere, Don Y. Kuramura, Saied Moezzi, Shankar Chatterjee and Ramesh Jain, University of California, San Diego

### 4P. Panel: Multimedia on a Shoestring: Low Bandwidth Implementations

Chair: John Danskin, Dartmouth College

If Multimedia is to be accessible to the masses, it will have to work across slow networks like the standard telephone system. We are also seeing a tremendous increase in wireless (cellular modem) applications, especially for personal digital assistants. These machines present a tremendous new market for the multimedia community, but the network bandwidth problems associated with these machines are severe.

We will discuss problems, solutions and approaches associated with implementing multimedia applications over low bandwidth network connections such as cellular modems and phone lines.

6:30 pm - 9:00 pm

Off-site conference reception

Wednesday, November 8

9:00 am - 10:30 am

#### 5A. Speech and Audio Interfaces

Surfing the Web by voice

Charles T. Hemphill and Philip R. Thrift, Texas Instruments

Hearing Aid: Adding verbal hints to a learning interface

Elizabeth Stoehr and Henry Lieberman, MIT Media Lab

Query by humming: Musical information retrieval in an audio database

Asif Ghias, Jonathan Logan, David Chamberlin and Brian C. Smith, Cornell University

#### 5D. Demonstrations: Networked Video

MBONE VCR - A video conference recorder for the MBONE

Wieland Holfelder, ICSI

A distributed real-time MPEG audio video player

Shanwei Cen and Jonathan Walpole, Oregon Graduate Institute

#### 5P. Personal Narrative Spaces

Chair: Sha Xin Wei, Stanford University

Emerging multimedia technologies have blurred the lines between classically distinct categories of theater and narrative: stage-spaces in which humans and artifacts interact, and spaces of symbols like a page of text or a digital video to be interpreted by an observer. This panel brings together practitioners to take stock of the state of the art and point out some exciting lines of work in the field of interactive media.

What will we face do when we freely inter-mix computational artifacts with human agents in our living, writing or performance spaces? How will we make sense of such hybrid spaces and how will we share these interpretations?

These questions are intimately tied with techno-scientific issues as well as literary and social issues. How should media models evolve to meet the needs of these personal narrative spaces? What are some design limitations of our tools or frameworks? What are some potential functions that inhabitants, browsers, composers, and architects can tap in emerging frameworks? What are some worthy challenges for researchers and developers interested in interactive multimedia?

11:00 am - 12:30 pm

#### 6A. Multimedia Network Tools

Managing real-time services in multimedia networks using dynamic visualization and high-level controls

Mun Choon Chan, Giovanni Pacifici and Rolf Stadler, Columbia University

An application level video gateway

Elan Amir, Steven McCanne and Hui Zhang, University of California, Berkeley and Carnegie Mellon University

Multimedia traffic analysis using CHITRA95

Marc Abrams, Stephen Williams, Ghaleb Abdulla, Shashin Patel, Randy Ribler and Edward A. Fox, Virginia Polytechnic Institute and State University

#### 6D. Demonstrations: Video-centric Information Systems

GUARDIAN: A knowledge-based home health-care system for children with leukemia  
Michelle Y. Kim, IBM T.J. Watson Research Center

CITYQUILT: A navigable movie Tirtza Even

#### 6P. User Interface Challenges of Multimedia Design

Chair: Penny Bauersfeld

Multimedia product and applications pose particularly difficult challenges for user interface (UI) designers. Not only must designers address the typical interface challenges of software or hardware products, they face a multitude of other issues introduced by each media type. Some typical UI considerations, such as functionality, structure navigation, and visual design may be increasingly complicated by powerful media content or control. In addition, media projects may be intended for audiences very different than standard personal computer users with varying expectations about interaction or functionality. Usability and design concerns are not easily addressed.

Interface designers new to multimedia applications often do not have the knowledge necessary to focus on media design. Similarly, multimedia developers who have little experience in designing user interface are challenged to make their products accessible and interactive. Multimedia UI design is, in fact, becoming its own discipline, where experts must know both the media world and user interface design.

2:00 pm - 3:30 pm

#### 7A. Video and Image Collections

Integrated video archive tools

Rune Hjelsvold, Stein Langorgen, Roger Midtstraum and Olav Sandsta, Norwegian Institute of Technology, Norway

Automatic recognition of film genres

Stephan Fischer, Rainer Lienhart and Wolfgang Effelsberg, University of Mannheim, Germany

An integrated color-spatial approach to content-based image retrieval Wynne Hsu, T.S. Chua and H.K. Pung, National University of Singapore

#### 7D. Demonstrations: Enabling Hardware and Software

Montage multipoint audio and video

S.R. Ahuja and R.D. Gaglianella, AT&T Bell Laboratories

The programmers' playground demo

T. Paul McCartney, Kenneth J. Goldman and Bala Swaminathan, Washington University

#### 7P. Museums, Multimedia, and Cultural Learning

Co-Chairs: Ranjit Makkuni (Xerox PARC) and Mike Sipusik (UC Berkeley)

Museums provide people with a rich setting for cultural learning. Museums are the repositories of artifacts from diverse cultures. However, we should not forget that these artifacts are located in-situ a cultural practice, and need to be seen in their original cultural context where interrelations between form, process, myth, symbol, philosophy, ritual and celebration get articulated. Modern multimedia systems in museums have begun to address the issues of "re-contextualising" the cultural artifact in its original context. Members of the panel will show examples of cultural learning systems, and the design challenges of re-contextualisation.

Panelists consist of designers of learning systems, education researchers, museum administrators.

4:00 pm - 5:30 pm

#### 8A. Multimedia Networking

Fast lossy Internet image transmission

Geoffrey M. Davis and John M. Danskin, Dartmouth College

A reliable dissemination protocol for interactive collaborative applications

Rajendra Yavatkar, James Griffioen and Madhu Sudan, University of Kentucky

A generalized admissions control strategy for heterogeneous, distributed multimedia systems

Saurav Chatterjee and Jay Strosnider, Carnegie Mellon University

#### 8D. Demonstrations: Video Indexing

Automating the creation of a digital video library

Michael A. Smith and Michael Christel, Carnegie Mellon University

A video parsing, indexing, and retrieval system

H.J. Zhang, J.H. Wu, and C.Y. Low, National University of Singapore

#### 8P. Panel: Multimedia and Education: Magic, Myth or Miracle Cure?

Chair: Rachelle Heller, George Washington University

The media has latched onto the use of multimedia in education. This panel will attempt to question the issues beyond the hype - is it an appropriate atmosphere in which to offer educational experiences or does it reinforce the 30 second sound byte mentality, what is it about multimedia that makes it a tool for all learners or is it a superficial educational environment? Is it just for kids or will all learners benefit from using multimedia? These and other questions will be addressed by this lively panel of theorists and practitioners.

7:00 pm - 10:00 pm

Interactive Demonstrations

The multimedia forum kiosk and Narli  
Christopher M. Hoadley, Sherry Hsi, and Benjamin Berman, University of California at Berkeley

Collaborative multimedia in SHASTRA  
Chandrajit Bajaj and S. Cutchin, Purdue University

Automatic recognition of film genres  
Wolfgang Effelsberg, Stephan Fischer, and Rainer Lienhart, University of Mannheim

HEIDI-II: A testbed for interactive multimedia delivery and communication  
Max Ott, G. Michelitsch, and J. Hearn, C&C Research Labs, NEC USA

An object-oriented model for the semantic interpretation of multimedia data  
Rob Adams, James Griffioen, and Raj Yavatkar, University of Kentucky

Managing real-time services in multimedia networks using dynamic visualization and high-level controls  
G. Pacifici, M.C. Chan, and Rolf Stadler, Columbia University

Thursday, November 9

9:00 am - 10:30 am

#### 9A. Video in Hypermedia

ConText: Towards the evolving documentary  
Glorianna Davenport and Michael Murtaugh, MIT Media Lab

Surfing the movie space: advanced navigation in movie-only hypermedia  
Joerg Geissler, GMD-IPSI, Germany

Automated authoring of hypermedia documents of video programs  
Behzad Shahraray and David C. Gibbon, AT&T Bell Laboratories

#### 9B. Synchronization (it's about time....)

Scheduling MPEG-compressed video streams with firm deadline constraints  
Ching-Chih Han and Kang G. Shin, University of Michigan

Low-level multimedia synchronization algorithms on broadband networks  
Miguel Correia and Paulo Pinto, INESC and IST, Portugal

Coordinating heterogeneous time-based media between independent applications  
Scott Flinn and Kellogg S. Booth, University of British Columbia, Canada

#### 9P. What's that Character doing in your Interface?

Chair: Abbe Don, Abbe Don Interactive Inc.

Until recently, the discussion of the use of characters in the interface centered on the old question to anthropomorphize or not to anthropomorphize the interface. With the appearance of Microsoft's "social interface" in the form of Bob and his pals, with Fujitsu's use of avatars in their online service "Habitat," and with millions of people representing themselves daily in various contexts on the Internet, the old discussion centering on the wonders or pitfalls of anthropomorphism seems moot. Instead, many multimedia designers,



producers, and software engineers find themselves accepting the use of characters in the interface and are now grappling with a more difficult set of issues regarding implementation.

These questions include:

What is the most appropriate representation for a particular application or audience?

Why are some characters accepted while others are dismissed as "too cute?"

How do you match back-end functionality with the promises of the front-end representation?

What tools are needed to enable users to create their own characters or agents?

If a character acts autonomously, how do you explain the action to the user?

Can characters be truly adaptive to users' needs?

Can characters be truly adaptive within a story or entertainment context?

Can characters and 'bots be used effectively on the World Wide Web?

11:00 am - 12:30 pm

#### 10A. Learning with MultiMedia

The PsyCLE Project: educational multimedia for conceptual understanding

Nick Hammond, Jean McKendree, Will Reader, Annie Trapp and Peter Scott, University of York and University of Sheffield, UK

pianoFORTE: A system for piano education beyond notation literacy

Stephen W. Smoliar, John A. Waterworth and Peter R. Kellock, National University of Singapore and Umea University, Sweden

eMMaC: Knowledge-based color critiquing support for novice multimedia authors

Kumiyo Nakakoji, Brent N. Reeves, Atsushi Aoki, Hironobu Suzuki and Kazunori Mizushima, MITI, Japan; Software Research Associates, Inc. and University of Colorado

#### 10B. Media Encoding

Model-based motion estimation for synthetic animations

Maneesh Agrawala, Andrew C. Beers and Navin Chaddha, Stanford University

Inner-block operations on compressed images

Bo Shen and Ishwar K. Sethi, Wayne State University

Direct manipulation of MPEG compressed digital audio

M. Alexander Broadhead and Charles B. Owen, Dartmouth College

2:00 pm - 3:00 pm

#### 10P. Broadband Data Services to the Home

Chair: Gita Gopal, HP Laboratories

The ubiquitous deployment of broadband access architectures to the home, coupled with an access-bandwidth technology discontinuity in the form of high-speed cable modems, will cause an explosion in broadband interactive data services to the home. The panel speakers will discuss services enabled by cable modems, the service software that is needed to provide these services, and the differences between this environment and other candidates for the NII including Video-On-Demand, and the Internet.

2:00 pm - 3:00 pm

#### 11. Award Papers

Best Student Paper:

vic: A flexible framework for packet video

Steven McCanne and Van Jacobson, University of California, Berkeley

Best Paper:

A confederation of tools for capturing and accessing collaborative activity

Scott Minneman, Steve Harrison, Bill Janssen, Gordon Kurtenbach, Thomas Moran, Ian Smith and Bill van Melle, Xerox PARC, Alias and Georgia Institute of Technology

3:30 pm - 5:15 pm

12. Follow the Artists

Speaker: Carol Peters, daVinci Time & Space

High speed computing, multimedia capabilities, high speed networks, and authoring tools are the technical enablers of a new design language that will express new forms of entertainment, education, and information. This design language will allow visual, sound, and literary artists to speak through the new technology. To learn how to speak the language, the artists must start their lessons now. As partners to the artists, the technologists must learn how to listen to, follow, and create mechanisms for the artists. Thus will technologists discover how to specify and make accessible the new design language. Thus will the artists speak and invent. Technologists in service to artists will allow the new art forms to speak through the technology.

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