



Fraunhofer Gesellschaft

Multimedia and Security Workshop at ACM Multimedia 2000, Los Angeles

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Multimedia and Security Workshop at ACM Multimedia At the 8th ACM International Multimedia Conference November 4, 2000 Los Angeles, California

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The HTML-Versions of the paper can be loaded [here](#).

Introduction

Security has become one of the most significant and challenging problems for spreading new information technology. Digital data can easily be copied and multiplied without information loss as well as manipulated without any detection. This requires security solutions, which encounter these threats. Security solutions are especially of interest for such fields as distributed production processes and electronic commerce, since their producers provide only access control mechanisms to prevent misuse and theft of material. By increasing both the requirements for efficiency and the possibilities of IT-systems, the needs for security and trustworthiness also enlarges. These needs are particularly important for security-relevant applications as well as for applications processing sensitive personal data. IT-systems are commonly used for different kinds of applications, increasingly applications dedicated to multimedia. Obviously, secure and trustworthy actions and interactions are very important requirements for multimedia systems.

Objectives

The workshop analyses specific security problems of multimedia systems and multimedia material in the digital environment. Based on our discussion during the workshop at the ACM MM '98 in Bristol and at the ACM MM '99 in Orlando, we want to continue with the state of the art evaluation and discuss future needs for the design of MM Security and legal

We want to face the topic of the use of digital signatures for authentication. Furthermore, problems deriving from the usage of public-key certificates within security infrastructures will be discussed. Additionally, attribute certificates are introduced, which can be used excellent for customer specific profiles.

Beside technical approaches, legal requirements, the identification of design, and acceptance problems of security solutions are addressed. Finally, multimedia applications are presented, e.g. within the field of electronic commerce where security solutions are of main interest.

This year we have four invited talks:

- Edward J. Delp, Video and Image Processing Laboratory (VIPER) School of Electrical and Computer Engineering Purdue University West Lafayette, Indiana USA: Watermarking with Applications in Internet Media Streaming
- Ton Kalker, Philips Research Laboratories, Eindhoven, The Netherlands: Audio Watermarking for Monitoring and Copy Protection
- Adnan Alattar, Digimarc Corporation: Bridging Printed Media and the Internet via Digimarc's Watermarking Technology
- Klaus Keus, BSI, Germany: Legal aspects of digital signatures and watermarking

and a call for papers to include other reviewed papers for a day-long workshop to related topics such as but not limited to

- copyright protection
- robust and fragile watermarking techniques
- watermarking attacks
- visual models
- quality evaluations and benchmarks
- conditional access
- content-based digital signatures
- legal aspects

aspects. We understand that the interest and importance of security was reflected in the great number of participants from all over the world in the last two workshops.

Based on these excellent experiences, the objective of the workshop is to see the advantages in the field of multimedia and security. The intention of the workshop is to bring together experienced researchers, developers, and practitioners from academia and industry for a state of the art evaluation and discussions of topics and problems for multimedia security environments for our new century. The workshop reflects the strength and weaknesses of what the multimedia community has to offer to meet the needs of secure multimedia environments. The participants will get an excellent overview about what the community has to offer, where are the improvements, the progress, and the problems.

Contents

Initially, the progress of digital watermarking will be presented. We want to classify digital watermarking techniques, their applications and fundamental parameter. In addition, we introduce new fragile watermarking systems which ensure manipulation recognition. Here, we distinguish between content-preserving and content-manipulating changes. In the field of copyright protection, we want to discuss robustness, security, and the usage of public-key solutions. Existing multimedia security mechanisms use steganographic approaches and are mostly not realized

- watermarking protocols
- security in JPEG2000, MPEG-4, MPEG-7 or MPEG21
- biometrics and multimedia security
- video and audio crypting
- watermarking applications

How to submit? Please see [above](#). The papers (page limit is 4 pages) will be published by ACM in an extra workshop proceeding. We plan to publish a longer version (up to 12 pages) in a GMD publication. The workshop fee will be \$100 for ACM members and \$120 for non-members.

[More about the ACM Multimedia 2000](#)

by cryptographic solutions applying security. Thus, the discussion is extended to the use of cryptographic mechanisms.

[next column](#)

Session outline

4 th Nov

- 1.) 8:00am Welcome and Introduction to the Workshop, Jana Dittmann; GMD – IPSI, Germany
- 3.) To have more discussion in the workshop, the presenters are asked to give a short overview of their work and the problem and/or solutions, after each section are questions and discussions

Session 1: Security Requirements and Aspects

Chair: Klara Nahrstedt

8:15am Digital Watermarking: Security Aspects and Mechanisms, Jana Dittmann; GMD – IPSI, Darmstadt, Germany

8:35am Aspects of Security Infrastructures: Digital Certificates, Petra Wohlmacher; University of Klagenfurt, Austria

8:55am Structural Digital Signature for Image Authentication: An Incidental Distortion-Resistant Scheme, Chun-Shien Lu, Hong-Yuan Mark Liao; Institute of Information Science, Academia Sinica, Taipei, Taiwan

9:15am – 9:40am Break

Session 2: Watermarking Algorithms

Chair: Jana Dittmann

9:40am Audio Watermarking for Monitoring and Copy Protection, Ton Kalker; Philips Research Laboratories, Eindhoven, The Netherlands

10:00am A Distribution Detection Framework for Watermark Analysis, R. Chandramouli; Iowa State University, Ames, USA; Nasir D. Memon; Poly-technic University, Brooklyn, USA

10:20am Secure Data Hiding in Wavelet Compressed Fingerprint Images, Nalini K. Ratha, Jonathan H. Connell, Ruud M. Bolle; IBM Thomas J. Watson Research Center, Hawthorne, USA

10:40am Secure High Data Embedding Rate for Steganographic Applications, Faisal Alturki, Russell Mersereau; Georgia Institute of Technology, Atlanta, USA

11:00am – 11:20am Break

Session 3: Hardware for Watermarking

Chair: Petra Wohlmacher

11:20am Watermarking at Point of Origin, Andrew Z. Tirkel; Scientific Technology, Dendy Brighton, Australia; Tom E. Hall; Monash University, Victoria, Australia

11:40am Multimedia Content Protection by Cryptography and Watermarking in Tamper-resistant Hardware, Feng Bao; Kent Ridge Digital Labs, Singapore

- 12:00am Digital Document Integrity (Demo), Graham Shaw; Signum Technologies Ltd.

12:10am – 1:40pm Lunch Break

Session 4: Security Problems in Multimedia Systems and Networking

Chair: Ton Kalker

1:40pm Watermarking with Applications in Internet Media Streaming, Edward J. Delp; Purdue University West Lafayette, Indiana, USA

2:00pm Coimbra: Secure Web Access to Multimedia Content, Edgar Weippl; Software Competence Center, Hagenberg, Austria

- 2:20pm Associating IP Data Streams with User Identities – Enabling Enhanced Security, Billing and Copyright Protection, Ralf Ackermann, Michael Zink, Utz Roedig, Carsten Griwodz, Ralf Steinmetz; TU-Darmstadt, Germany

- 2:40pm Securing RSVP for Multimedia Applications, Vanish Talwar, Klara Nahrstedt; University of Illinois at Urbana Champaign, USA

3:00pm – 3:30pm Break

Session 5: Regulations and Legal Requirements

Chair: Edward Delp

- 3:30pm Legal Aspects of Digital Signatures and Watermarking , Klaus Keus, BSI, Germany

- 3:50 pm Can P3P Help to Protect Privacy Worldwide?, Rüdiger Grimm; GMD – SIT, Darmstadt, Germany; Alexander Rossnagel; University Kas-sel, Germany

- 4:10 pm How to Bypass the Wassenaar Arrangement – a New Application for Watermarking, F. Leprévost, R. Erard, D. Santa Cruz, M. Kutter, T. Ebrahimi

- 4:30 pm Bridging Printed Media and the Internet via Digimarc's Watermarking Technology, Adnan Alattar; Digimarc Corporation, USA

- 4:50pm Summary, Open Questions and Future Work
- Jana Dittmann, Klara Nahrstedt, Petra Wohlmacher

5:00pm End of the Workshop

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