Watermarking process protects video producers, purchasers

By James E. Kloeppel

With the rapid growth of multimedia systems, problems associated with multimedia security and copyright protection have become major issues. Researchers at the University of Illinois at Urbana-Champaign have developed a watermarking process that protects both the original owner and legitimate customers of copyright multimedia data.

"A number of digital watermarking techniques have been proposed in recent years, but none has fully addressed the problems of proving rightful ownership or protecting a customer’s right to use the material," said Klara Nahrstedt, a UI professor of computer science.

"The purpose of a watermark is to protect the owner’s copyright," Nahrstedt said. "Without a careful design and proper requirements on the watermark, however, an attacker can easily manipulate the watermarked material and confuse rightful ownership."

To create a tamper-proof watermark, Nahrstedt and graduate student Lintian Qiao developed a watermarking algorithm that combines a standard encryption function with part of the original video image. Because the resulting watermark is dependent upon both the original material and the encryption function, rightful ownership is easily determined.

"To prove ownership, both the original material and the watermark construction algorithm are required for the verification process," Nahrstedt said. "Therefore, manipulated watermarks are easy to identify and discredit."

The researchers’ watermarking process also can be used to protect the rights of legitimate customers, an important feature not found in other watermarking techniques.

"Currently, sellers of video information have complete control over the watermarking procedure, and customers have no way to prove their rights to use the watermarked data," Nahrstedt said. "To provide proper protection to customers, the watermarking framework needs protocols that involve both owners and customers.

One such protocol, designed by Nahrstedt and Qiao, encodes a customer’s unique identification into the owner’s watermark at the point of purchase. This creates a unique watermark for each purchase, and ensures that only legal customers can prove their rights to use the material. The ideal watermark should be invisible, create minimal distortion and be extremely difficult to remove," Nahrstedt said. "The integration of our watermarking scheme with the customer’s right protocols creates a robust framework that resolves rightful ownership and protects customers’ rights.

Nahrstedt and Qiao described their watermarking process at the IEEE International Conference on Multimedia Computing and Systems, held June 28 through July 1, in Austin, Texas.

Meanwhile, visitors will have virtual access to the museum’s collection through its Web site, http://www.spurlock.uiuc.edu. "Because we’re closed, our collections are basically in the computer – and schools can still visit," Brewer said. While anyone can access materials by means of the Web, he noted that teachers interested in preparing special units or “visits” for their classrooms are encouraged to contact the museum staff at 333-2360 to request assistance.

"We have the computer and scholarly expertise available to search for the right material and pull it together much more efficiently than anyone else, and are more than willing to provide that help," Brewer said.

Apple grant funds UI/UMS collaboration

The UI College of Education and Urbana Middle School will receive a $100,000 grant from Apple Education for their collaborative project, “Unity in the Community.” The goal of the project is to use service learning and computer technology to create a student-centered, project-based curriculum.

The grant was one of 10 announced at the National Education Computing Conference in San Diego on June 24.

The Apple Education Grants program seeks to support schools that demonstrate innovative ways to use technology in their classrooms and who would otherwise have limited access to technology. This year’s grants also require collaboration between K-12 schools and higher education institutions that deliver ongoing teacher professional development.

Apple Education has been awarding the grants for 20 years. This year’s $1 million grant will provide hardware, software and staff development training.

Three representatives from Urbana Middle School and two from the College of Education – Evangeline S. Pianfetti, Office of Educational Technology, and Jim Dildine, department of curriculum and instruction – will attend a 10-day seminar at Camp Apple at Walker Creek Ranch in California. The group will then implement the program at Urbana Middle School this fall.

Klara Nahrstedt, right, a UI professor of computer science, and graduate student Lintian Qiao have developed a tamper-proof watermark that combines a standard encryption function with part of the original video image.
Sizzling summer recipes

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**Red Fruit Punch**

“Here are four recipes I use a lot over the summer. Most of these are quick and easy for hectic summer schedules. I have always enjoyed collecting and trying new recipes for my family. Especially now as the coordinator of the Family Nutrition Program in our unit, I look for new ways to encourage people to stay healthy by eating foods from the base of the Food Guide Pyramid.”

**Zucchini Casserole**

I got this recipe from a neighbor through our local Homemakers group. I like it because it uses several of the vegetables I grow in my garden and my family enjoys this as a change when we have so much zucchini.”

**Pink Salad**

“This is an old family favorite. It is a must at most family get-togethers. It, too, is quick and easy to make.”

**Vegetable Salad**

“I received this recipe from a close family friend – at my wedding shower 22 years ago. This makes a pretty salad, with a variety of colors.”

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**Nicholas C. Burbules, professor of education policy studies, was one of 40 young leaders recognized by Change magazine for their contributions to civil education. Burbules edits the journal Educational Theory and is co-editor of the online journal Education Review. The program sought to recognize people younger than age 45 who significantly contribute to and influence thought and action in American higher learning on a day-to-day basis.**

**Joe Green**, adjunct professor of physics and professor in the department of materials science and engineering, was awarded the American Physical Society’s prestigious David Adler Lectureship for outstanding research and lecturing on the physics and chemistry of thin films. Green is also Chair Professor of Physics at Linköping University, Sweden.

**Margaret Meixner**, professor of astronomy in the Department of Civil Engineering, was a recipient of the National Academy of Engineering for the theory and practice of removing organic contaminants from drinking water. Election to the NAE is among the highest professional distinctions accorded to an engineer.

**John C. Wilcox**, professor of Spanish, was elected the next president of the Twentieth Century Spanish Association of America. His term extends from 1998 until April 2001.

Dale J. Van Harlingen, professor of physics, and D.M. Ginsberg, professor emeritus of physics, have been awarded the American Physical Society’s 1998 Oliver E. Buckley Prize in Condensed Matter Physics. They will share the prize with two IBM physicists, J.K. Kirtley and C.C. Toher. The purpose of the prize is to recognize and encourage outstanding theoretical or experimental contributions in condensed matter physics. The annual prize, endowed by AT&T Laboratories in 1951, consists of $5,000 and a certificate citing the research contributions made by the recipients.

Barbara K. Hein, administrative secretary in the Division of Campus Recreation; Michael T. Griffin, assistant food production manager at Peabody Dining Services; Stanley Apperson, director of conference services, Housing Division; and Michele MacLeod, staff nurse at McKinley Health Center, were honored with the Student Affairs Outstanding Staff Award. The winners demonstrated exemplary commitment to the professional standards and mission of their department and accomplished much to the UI, its students, and to Student Affairs.

WILL-AM (580) reporters captured four first-place awards and three second-place awards in this year’s Associated Press broadcast contests in Illinois and Indiana. Cheryl Uitti’s report on Carle Clinic’s billing practices was awarded first place for “Best Investigative Report” in the downstate Illinois competition. Uitti also received a first-place award for “Best Feature” for her story about a chimney sweep. The same feature received a second-place award for “Best Use of Radio Sound” in the Indiana competition.

Director of agricultural programming Charles Lindy and associate producer Tammy Alexander won the second-place award for “Best Public Affairs Program” in the Indiana contest for “Commodity Week.” Former WILL-AM reporter Bob Schobler’s series on the Tuskegee experiments was awarded the first-place award for “Best Documentary/Mini-Series” in the downstate Illinois contest. The same series was awarded second place in the “Best News Series” and “Best Use of Radio Sound” categories in Indiana. Schobler also received a first-place award in Indiana for “Best Continuing Coverage and Spot News” and a certificate for his feature on environmental concerns.

Winners of awards through the Civil Service Employees and Dependent Scholarship Program at the UI were honored at a reception May 19 at the Beckman Institute. One employee award of $400 and five employees’ dependent awards of $600 each were presented. The employee recipient was Pearl Carter, typing clerk II, Operation and Maintenance.

The dependent recipients were Serena Felkner, daughter of Annette Felkner, accountant I, National Center for Supercomputing Applications; Collin Miller, son of Nancy Miller, library technical assistant, College of Law; Caroline Moller, daughter of Linda Moller, secretary II, Housing Division; Amy Tempel, daughter of Vicks Tempel, staff secretary, department of chemistry, and David Tempel, instrument maker, department of mechanical and industrial engineering; and Darren Walters, son of Darryl Walters, steam distribution operation, Operation and Maintenance.

The scholarship fund was established by Civil Service employees to provide recipients with financial assistance in their pursuit of an undergraduate degree.
Shuttle parking renewal tags enforced July 13

Because of a changeover of the parking management system, the Division of Campus Parking, Transportation and Transient Services was unable to generate a mailing list for its current shuttle parking lot permit holders. To make it easier for its customers to renew their shuttle permits, Campus Parking is offering several options. In addition, enforcement of new tags in the shuttle lot will not begin until July 13.

To renew your permit, you may send a check for $65 (payable to UI) to the Division of Campus Parking, 1110 W. Springfield, MC 241. A renewal tag will be mailed by certified mail. New tags also may be purchased in person at the Division of Campus Parking from 7:30 a.m. to 5 p.m., Monday through Friday. Payroll deduction is not available for shuttle lot tags; payment must be made in full at the time the tag is picked up.

Student/Staff Directory changes due Sept. 1

UI employees who will be retiring between June 1 and Sept. 30, 1998, should request a retiree form from the Office of Publications, 333-9200, if they want their names included in the 1998-99 Student/Staff Directory. Participation is voluntary. Forms are due Sept. 1.

Faculty and staff members should check the 1997-98 directory to ensure that their listing is correct. To update your entry, refer to the red-bordered insert in the front of the current directory. Information on how to correct e-mail addresses is listed on page 14; you also may contact the Computing and Communication Services Office’s Resource Center help desk at 244-1258 or at 1420 Digital Computer Laboratory.

deaths

James M. Catlin

James M. Catlin, a former UI athletic team dentist, died June 24 at Carle Foundation Hospital, Urbana. He was 67.

Catlin graduated from Dental School at the UI in 1957 and spent two years in the Army in Korea. He started his practice when he returned from Korea and retired after 40 years. He served as the UI’s athletic team dentist for 39 years.

Catlin also was a former UI football player and was on the 1952 Rose Bowl team. He was a member of the UI Athletic Association, UI Quarterback Association and UI Booster Club. He was president of the Illinois Dental Association in 1975–76 and president of Varsity I in 1982.

He was a member and past president of the Illinois Dental Association and a member of the American Dental Association.

Survivors include his wife, Wrenna; two daughters, one son, and five grandchildren.

Memorial contributions may be made to the James M. Catlin Scholarship Fund in care of UI Foundation, Harker Hall.

George A. Deschamps

George A. Deschamps, a professor emeritus of electrical engineering, died June 20 at Meadowbrook Health Center, Urbana. He was 86.

Deschamps graduated from the Lycee de Caen in Normandy and entered the Ecole Normale Superieure in Paris, where he obtained an Agrégation de Mathematique from the Sorbonne.

After military service in France, he moved to the United States and taught for 10 years at the Lycee Francais de New York. He worked for another 10 years as senior scientist at International Telephone and Telegraph Corp.

Deschamps was named full professor and head of the Antenna Laboratory at the UI in 1958. He retired in 1982.

He was a member of the National Academy of Engineers and a life member of the Institute of Electrical Engineers and the American Physical Society.

He received the Distinguished Achievement Award from the Antennas and Propagation Society in 1987 and the Institute of Electrical and Electronics Engineers Centennial Medal in 1984.

Survivors include his wife, Elsa; two sons; two daughters; and five grandchildren.

Dorothy M. Lee

Dorothy Marie Lee, a food service employee for 40 years at the UI, died June 7 at Vertebrion Manor Nursing Home, Danville. She was 77.

Lee retired from the UI in 1991.

Survivors include a son, seven grandchildren, six great-grandchildren, four brothers and two sisters.

Paul J. Wells

Paul J. Wells, professor emeritus of economics, died June 10 in Menlo Park, Calif. He was 72.

He graduated from the University of Washington. After serving in the Army, he earned a doctorate from Stanford University.

Wells began his career as an economist with the Rand Corp. in Santa Monica, Calif., before joining the faculty of California State University in Los Angeles. In 1957 he joined the UI faculty, where he taught for 36 years.

He published many articles, two books— including his most recent, “Post-Keynesian Economic Theory” (Kluwer, 1995) — and was an editor of the Journal of Post-Keynesian Economics.

He also taught at Harvard University as a teaching fellow, and was a visiting professor at Stanford, the University of Hawaii and Simon Fraser University in British Columbia.

Survivors include his wife, Genev; four sons; a daughter; two sisters; and 15 grandchildren.

Arnold L. McDaniel

Arnold L. McDaniel, a former welder and pipefitter at the UI, died June 19 at his Champaign home. He was 87.

McDaniel retired from the UI in 1971.

He was a member of Local 149 Plumbers and Pipefitters, the Moose and was a life member of the Elks Club.

Survivors include his wife, Genev; four sons; a daughter; two sisters; and 15 grandchildren.

Memorial contributions may be made to the George A. Deschamps Memorial Fund.

Gary Brinkley

on the job

What is your job at the UI and how long have you worked here?

I have three jobs right now. I’m associate director of housing for computer services, which consists of management systems and residential student computing. Management systems takes in all computer services within Housing that is not related to student computing, the other part of my job. Residential student computing includes dining hall access systems, room assignments, etc. I am also chief technical coordinator for the UI’s I-Card, administrative level, and I’m working with McKinley Health Services to create a medical records computer system.

METCAD system. I was a co-designer of the original METCAD computer system. Going from a bomb squad to management information systems is quite a career change. Why such a change?

I’d been in it (bomb disposal) for 22 years and was burned out. This job is more low key. There is still stress, but it’s a different type of stress - it doesn’t get your adrenaline pumping like it did with bomb disposal. It’s been a really interesting career, and I don’t regret having done any of it. I would do it again, but I’m too old to be jumping out of planes. I’ve always been interested in a lot of different things. Music is my main love and I work to support that habit. I’ve been involved in music since 1957.

What kind of music and instruments?

I’m a songwriter and have played in bands for 15 years. I’ve been a member of ASCAP for almost 20 years. I’ve had some songs published and recorded as demos. An independent label in L.A. picked them up during the early ’80s. The songs were recorded by artists recording on that label and released nationally. The rest is history, the artists didn’t hit and neither did the songs. The demo records of “The Farmer” and “Tears on My Pillow” were aired in this region on radio and juke box and featured the bands I recorded with, The Silver Threads and Tennessee Borderline. Our fans were country rockers in southern Illinois and we played down south almost all the time. It was fun, but I was much younger then and could go without a lot of sleep for many days at a time. I’ve done about every kind of music except jazz. In the ’50s, I played rock ‘n roll – until the 1960s, when I moved to what is now called country rock. I played mostly bass when I was in bands, but now I basically play guitar. I usually sit in with area bands by invitation.

Why did you get into music?

I was a freshman in high school and at that time I wasn’t into sports. The next best way to meet girls was music. So I started in bands then. Have you been curious about what’s going on with all the recent news about bombs and bomb disposal in the area?

I feel like a racehorse when the bell goes off. Like that explosion in Danville, it was really hard not to pick the phone up and get involved.

-Nancy Koeneman

brief notes

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June 2-19

calendar of events

2 Thursday
“Moon Over Buffalo.” Robin Gordon, director, 8 p.m. Studio Theater, Krannert Center. A young architect is visited by a man who claims to be her father. The architect saves his life in Vietnam this summer to host the actor who outruns his welcome. Admission charge.

3 Friday
“Wait Until Dark.” Nancy Howard, director, 8 p.m. Studio Theater, Krannert Center. A blind woman falls prey to three scoundrels who hope to steal her inheritance or murder in their attempt to retrieve a doll they believe she has in her apartment. Admission charge.

5 Sunday

6 Monday

8 Wednesday
“The Nerd.” 7 p.m. Studio Theater, Krannert Center. Admission charge.

10 Friday

11 Saturday
“Moon Over Buffalo.” 8 p.m. Studio Theater, Krannert Center. Admission charge.

12 Sunday
“Wait Until Dark.” 7 p.m. Studio Theater, Krannert Center. Admission charge.

15 Wednesday

16 Thursday
Summer Music Festival Chamber Orchestra. Ian Hobson, conductor. 8 p.m. Foellinger Great Hall, Krannert Center. The program will include “Symphony Fantastique” by Hector Berlioz; “Symphonic Dance” from “West Side Story” by Leonard Bernstein and music of the Illinois Summer Youth Music Camp concert of music by Aaron Copland. Admission charge.

18 Saturday
Summer Music Festival Orchestra. Ian Hobson, conductor. 8 p.m. Foellinger Great Hall, Krannert Center. Admission charge.

19 Sunday
“Moon Over Buffalo.” 8 p.m. Studio Theater, Krannert Center. Admission charge.

20 Monday
Summer Music Festival. 8 p.m. foellinger great hall, krannert center. Admission charge.

22 Wednesday
Summer Music Festival Orchestra. Ian Hobson, conductor. 8 p.m. Foellinger Great Hall, Krannert Center. Admission charge.

23 Thursday
Summer Music Festival Orchestra. Ian Hobson, conductor. 7 p.m. Theatre, Krannert Center. Admission charge.

SummerSHARE. Assistant/associate professor, mathematics. Bachelor’s in business-related field plus minimum 5 years’ minimum analytical experience. Available immediately. Minimum $33,000. Junior, Kosas, 333-2897, jkosas@uiuc.edu. Closing date: June 30.

Chemical Science, School of. Research programmer. 50% research and 50% teaching in areas of physical or related field. PhD preferred. Experience with molecular modeling, simulations and/or quantum chemistry required. Available immediately. Applications accepted until position is filled.

Chemistry, School of. Assistant professor. PhD with teaching and research experience required. Available immediately. A bachelor’s in chemistry-related field is desirable. A research assistant or teaching assistant position is available. Robert Easter, 333-4562, reaster@uiuc.edu. Closing date: June 17.


Library. Assistant, associate or professor and assistant for student life and culture. Master’s in archival studies, library science. American history, higher education or related field required. Experience in academic or research libraries. Bachelor’s in library or archival studies with business application, theory and practice. Minimum 2 years’ experience. Available Aug. 1, Allen Davis, 333-7511. Closing date: July 30.

Veterinary Medicine. Faculty (rank open). Academic veterinary pathologist. ACP board certification and evidence of funded independent research project required. Research strengths include environmental toxicology; mechanism and epidemiology of viral, bacterial, fungal and parasitic disease; food safety; veterinary toxicology; pathology of non-mammalian models of human disease; and molecular immunology. Available immediately. Matthew Wallig, 333-2449, wallig@vetmed.uiuc.edu. Closing date: June 15.

Chief Information Officer. IT management responsibilities. BS/BA in computer science, engineering or related field. Experience in network, system, database, emergency backup and communications with a variety of tools required. Available immediately. Gary Morris, 333-2050. Closing date: July 3.

Office of Academic Human Resources, Suite 420, 110 S. Wright St., maintains the listings for faculty and academic professional positions. More complete descriptions are available in that office during regular business hours, and listings are also updated weekly on the Web site: http://webster.uihr.uiuc.edu/ahr/ahrjobrg.htm. Any other information may be obtained from the person indicated in the listing.


Annual Science. Assistant professor. PhD with a research emphasis in environmental importance. Ability to work with and to produce technical documentation required. Available immediately. Applications accepted until position is filled.

Annual Science. Assistant professor. PhD in environmental science, with a research emphasis in the role of impurities and/or the ability to work with and to produce technical documentation. Available immediately. Applications accepted until position is filled.

Annual Science. Associate professor. PhD with a research emphasis in environmental importance. Ability to work with and to produce technical documentation required. Available immediately. Applications accepted until position is filled.

Annual Science. Associate professor. PhD with a research emphasis in environmental importance. Ability to work with and to produce technical documentation required. Available immediately. Applications accepted until position is filled.

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