Digital watermarks protect images

Digital watermarks that use artificial intelligence will secure copyright on the internet, reports **Jennifer Foreshew**

A DIGITAL watermark technology that uses artificial intelligence to detect forgeries has been developed at the University of South Australia. The intelligent watermarking technique gives owners copyright protection on images and data used in internet and other applications.

Knowledge-based intelligent engineering systems centre director Lakhmi Jain said the system used intelligent algorithms to prevent watermark security being cracked.

Professor Jain said original material could be identified by embedding a digital watermark, such as a logo, and attaching a user key.

The hidden watermark could only be extracted by a user with the correct key, similar to a valid PIN.

Only the key owner, whose identity was securely embedded, could reveal and use the original image or document and verify its authenticity.

"The system is based on artificial intelligence techniques and it is very flexible in the sense that you can go to any level of watermark," Dr Jain said.

"By that I mean you could have watermarks inside a watermark — so from a security point of view, we believe it is one of the best systems developed."



High security: An embedded digital watermark and attached user key could be used in passport control

Dr Jain, whose team includes visiting professor Peter Jeng-Shyang Pan, of National Kaohsiung University of Applied Sciences in Taiwan, and PhD student Feng-Hsing Wang, said the technology had various applications, particularly for passport control.

"With a passport, we could embed a watermark that could only be extracted with a key by the passport office, which would verify a valid passport," he said.

Images of fingerprints, the iris of an eye or even voice speech could be embedded as watermarks for passport identification.

"It also had other implications for copyright production in CDs, DVDs and video," Dr Jain said.

Original artworks could also have a watermark with web addresses embedded, giving detailed information about each artwork when accessed by a mobile phone user with the correct identification key.

Even if only part of a picture was copied and used, an embedded symbol could still be extracted, Dr Jain said.

"We can embed a very large amount of information into an original image or document and, depending on the level of security required, users of our technology can have multiple keys or watermarks, with logos or other identification hidden within logos," he said.

There were plans to patent the technology and commercialise it through the university's business arm, he said.

Further funding of $150,000 was needed to help the researchers develop various applications for the system which could be in practical use next year.

Analyst serves DAM a warning

Jennifer Foreshew
• Business systems

THE digital asset management sector will continue to struggle unless vendors adapt to broader organisational requirements, a study warns.

Poor business case development, unreal expectations among vendors and clients, underestimation of complex integration, poor usability and end-user training are the reasons behind lacklustre projects, according to analyst Meta Group.

Small DAM vendors, such as Cantos and Leapfrog, may experience modest growth in licensed seat revenues with existing users, but are not growing their presence or seen as critical to IT infrastructure.

The findings come in the Meta Group report *DAM Busters: The Evolution of the Digital Asset Management Market.*

DAM projects are "often viewed as unique end-user applications to serve individuals, rather than as a service for creating, managing and accessing critical rich information assets across the entire organisation", the report says.

'DAM vendors will be forced to evolve beyond simply providing directories, libraries and repositories'
Meta Group

Vendors who have recognised the need for change (besides streaming media and broadcast-specific systems, which continue to

Plastic circuits within reach

• Science

RESEARCHERS have for years tried to craft flexible electronic circuits with plastic instead of metal to carry current.

Such a development would bring many advantages, such as enabling light and foldable electronic paper displays unlike existing heavy and rigid liquid-crystal displays.

Unfortunately, most conducting polymers do not disperse in liquid solvents and so cannot be made into products as easily as their workaday, non-conducting



Light: Paper ousts liquid crystal

corrosion in the manufacturing process, damaging the product.

To produce a polymer that can be dispersed in inert sol-

modified pedot may disperse in non-corrosive solvents.

The new polymer, dubbed oligotron, can be dispersed in non-corrosive industrial solvents such as acetone, propylene carbonate and nitromethane, making it ideal for manufacturing.

The caps can be modified by having various adapter molecules attached, resulting in versions of oligotron that have different applications.

Mr Elliott attached photosensitive adapter molecules to the caps, and when exposed to

Call-centre jobs hard to fill

Staff in the US will be hard to find until employers are ready to pay up

WHATEVER US citizens think about their companies using call centres in India to provide customer services, most would probably agree such offshoring costs jobs in the US.

Evidence for this has never been strong, although it is easy to find individual companies laying off US workers and hiring abroad.

Domestic call-centre employment seems to have held steady recently, at about three million.

