Special issue on : security of data hiding technologies

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ELSEVIER

Signal Processing 82 (2002) 1511–1512

SIGNAL PROCESSING

www.elsevier.com/locate/sigpro

Announcement

Special issue on: Security of data hiding technologies

Guest Editors

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New possibilities of digital imaging and data hiding open wide prospects in modern imaging science, content management and secure communications. However, despite the obvious advantages of digital data hiding technologies and their current progress, these developments carry inherent risks such as copyright violation, unauthorized prohibited usage and distribution of digital media, secret communications and network security violations.

Although the issues of robustness, visibility and capacity of digital data hiding technologies have received a lot of attention, their security aspect still remains an open and little studied problem. The security requirement is closely related to the stochastic visibility and unauthorized detection of hidden information and requires both new and careful study. New information-theoretic methods for blind stochastic detection of hidden data should be investigated. This aspect will have a great impact on robust digital watermarking, steganography, integrity control and tamper proofing (possibly even without embedded hidden data) and Internet/network security.

This special issue will focus on the theory and state-of-art applications of Security of Data Hiding Technologies in digital signal processing research. Some of the research topics for submission include, but are not limited to:

- Security–visibility–robustness–capacity aspects of data hiding technologies.
- Information-theoretic aspects of data hiding technologies.
- Steganalysis and unauthorized detection of hidden data.
- Visual and stochastic visibility of hidden data.
- Secure data embedding: content-adaptive watermark encoding, modulation and embedding.
- Steganography.
- Active and passive attacks against data hiding technologies.
- Stegoviruses and security architectures preventing distribution of hidden data and stegoviruses.
- Internet/network and protocol security issues.
- Blind classification of robust watermarking and steganographic technologies.
- Integrity control and tamper proofing.

Tentative schedule

- Manuscripts due: 30 November 2002
- Acceptance notification: 28 February 2003
- Final versions due: 30 April 2003

Short biographies

Sviatoslav Voloshynovskiy received his Ph.D. degree in Radio Engineering Systems from State University "Lvivska Polytechnika", Ukraine, in 1996. He immediately started as Assistant Professor at the above University. In 1998, he was at the Coordinated Science Lab, University of Illinois at Urbana-Champaign as a visiting scholar. Currently he is an Assistant Professor at the University of Geneva, Switzerland, and an Associate Professor at State University "Lvivska Polytechnika". He is head of stochastic image processing

PII: S0165-1684(02)00286-4

and watermarking group at the Computer Vision and Multimedia Laboratory, University of Geneva. He has over 80 journal and conference papers, and six patents in radar imaging, smart antenna arrays, steganography and digital watermarking. His current research interests include information-theoretic aspects of digital watermarking, steganography, data compression and denoising. Dr. Voloshynovskiy served as a consultant for several industrial companies in the field of digital watermarking and document security and a co-chairman for several special sessions in digital watermarking and robust restoration and detection. He has given several tutorials on this subject together with Prof. T. Pun.

Thierry Pun received his Ph.D. in image processing in 1982, at the Swiss Federal Institute of Technology in Lausanne (EPFL). He is currently full professor at the CS Department, University of Geneva, and head of the Computer Vision and Multimedia Laboratory. His current research focuses on image and video watermarking, content-based information retrieval systems, multimodal interaction. He has authored or co-authored about 200 journal articles, conference papers, patents, and led and participated in a number of national and European research projects. He has been involved in digital watermarking since 1997, regarding the development of robust watermarking methods, of dedicated watermark attacks, as well as of benchmarking tools.

Jessica Fridrich is a Research Professor at the Department of Electrical and Computer Engineering at State University of New York, Binghamton. In 1987, she received her MS degree in Applied Mathematics from the Czech Technical University in Prague, Czech Republic, and her Ph.D. in Systems Science in 1995 from the State University of New York in Binghamton. Her main research interests are in the field of steganography and steganalysis, watermarking for authentication and tamper detection, and digital forensic analysis. She was the principal investigator on funded research projects from the US Air Force, the Air Force Office of Scientific Research, DARPA, and NSF. Dr. Fridrich has organized and chaired many sessions at international conferences and currently serves as a member of organizing committees and as a reviewer for several annual international events. In the past seven years, Fridrich's research has been steadily supported by the US Air Force in the form of 14 research grants worth over US$2.3mil, generating five US and international patents. Dr. Fridrich also collaborates with the industry as a consultant (Wetstone Technologies, Mission Research Corporation, MTL, Kodak).

Prof. Fernando Pérez-González received his Ph.D. from the University of Vigo, Spain, in 1993 in the area of robust adaptive algorithms for control and communications. He joined the University of Vigo, Spain, in 1990, where he is currently full professor at the Signal Theory and Communications Department. He has published more than 20 papers in refereed international journals and more than 60 papers in leading international conferences, in the topics of digital communications, digital television, adaptive algorithms and watermarking. Professor Pérez-González has led many projects in these areas for a number of organizations and companies, has co-edited four books, and since 1999 has chaired the Bayona series of workshops funded by COST (229, 254) programs. He was the guest editor of special sections in EURASIP's Signal Processing Journal (1997, 2001) and in the IEEE Communications Magazine. In the field of digital watermarking he has published several papers in leading international journals, including Signal Processing, Proceedings of the IEEE, IEEE Transactions on Image Processing and IEEE Journal on Selected Areas in Communications.

Nasir Memon is an Associate Professor in the computer science department at Polytechnic University, New York. His research interests include data compression, computer and network security and multimedia communication and computing. He has published more than 100 articles in journals and conference proceedings and holds two patents in image compression. He is an associate editor for the IEEE Transactions on Image Processing and the ACM Multimedia Systems Journal.