

Tutorial 3

Speaker's Name: Prof Alex Kot

Position/Affiliation: Vice-Dean (Research)
Nanyang Technological University
School of Electrical and Electronic Engineering

Email: eackot@ntu.edu.sg

Speaker's Biodata:

Dr. Alex Kot is currently Professor and Vice Dean (Research) for the School of Electrical and Electronic Engineering, at the Nanyang Technological University, Singapore. He was previous Head of the Division of Information Engineering for eight years. He has published extensively with over 100 journal and conference papers in the areas of signal processing for communication, biometrics recognition, data-hiding, authentication and staganalysis for digital media.

He was Associate Editor for the IEEE Transactions on Signal Processing from 2000 to 2003. Currently, he serves as Associate Editor for the IEEE Transactions on Circuits and Systems for Video Technology, IEEE Transactions on Circuits and Systems Part II, Editor for the EURASIP Journal of Applied Signal Processing and Journal of the Chinese Institute of Engineers, Taiwan and Guest Editor for the Special Issue on the Analysis and Understanding for Video Adaptation for the IEEE Transactions on CSVT.

Presently, he is member of the IEEE Signal Processing Conference Board, the IEEE CAS Visual Signal Processing and Communication Technical Committee, and the IEEE Multimedia Steering Committee. He is the IEEE Chapters Chairman overseeing the IEEE Signal Processing Chapters worldwide. He has served the IEEE in various capacities such as the Chairman of the IEEE Signal Processing Chapter in Singapore from 1995 to 1998, the General Co-Chair for the 2004 IEEE International Conference on Image Processing (ICIP) and the 1999 IEEE International Conference on Information, Communication and Signal Processing (ICICS), the keynote speaker for IMAGE 2003, advisor for IEEE ICONIP 2002 and IEEE PCM 2003, and the technical program committee member for professional societies and major conferences. He serves as the member of the IEEE TMM Prize Paper Award Committee. He serves in the panel of judges for the Singapore Millennium Fellowship and Microsoft Imagine Cup. He is a Fellow of the IES (Singapore) and the IEEE Distinguished Lecturer.

Tutorial Title: Watermarking, Data Hiding and Image Forensic

Subject Area: Digital Security

Duration: Half Day

Tutorial Abstract:

With the advances in digital technology, manufacturing cost of digital camera, multimedia hand phone and PDA is dropping and digital broadcasting is becoming mature. The transmission of digital media through internet is getting very popular. Not only multi-level images, video and audio are in digital form, binary images are also digitized in the applications including legal documents, digital books, contracts and electronic drawings. Recently, data hiding techniques have been proposed for ownership protection, copy control, annotation and authentication of digital media.

This tutorial provides a review on the latest development in data hiding for authentication in digital media communication. In particular, security in black and white, an emerging technology for the digital media will be delivered. Different data hiding techniques for binary images using pattern based, contour based, and transform domain based will be discussed and analyzed. Distortion measure scheme is proposed to match with the human visual perception. Data hiding technology combined with secured authentication techniques will be discussed for secured media transmission and tracking. Staganalysis and image forensic in data hiding will also be included in the tutorial.

Potential audience:

Anyone interested in the area of digital security