Digital Steganography-Steganalysis in Unsecure Channels

by

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All interested are cordially invited.

ABSTRACT:

Unlike cryptography, which aim is to avoid an outsider to read the information, steganography is the science and the art of covert communications. The objective of steganography is to transmit secret messages without drawing suspicion. Fundamentally, the steganographic goal is not to prevent outsider from decoding the hidden message, but to prevent them from suspecting the existence of the secret message and eventually to extract it. In modern steganography, any digital objects, such as images, sounds, text document or video can be used as a message carrier. Thanks to the development of the internet, steganography has become an interesting field of research and development. To detect and perhaps covert messages/communications a number of steganalysis methods have been developed.

Video steganalysis methods remains relatively young compared to image and text detection. In addition, thtrend and e recent development of video communication platforms, sharing videos on the internet has become as easy as sharing images. Since the majority (all) of the video steganographic methods are applied in the transform domain therefore the need to be robust against compression distortions.

In this presentation, we discuss the concept of digital steganography and steganalysis by giving simple examples to allow novice users to understand the concept. Then we will discuss a method based on the analysis of the motion vectors (MV) used in the MPEG-4 and H.264 standards. We have used the concept of mathematical morphology which will be discussed briefly and its application to MVs. Including a discussion of the morphology of the MV map. Then, we will discuss a classifier approach using support vector machine (SVM) for the detection of hidden messages using a number of video.

BIOGRAPHY:

Ahmed Bouridane received an "Ingenieur d'Etat" degree in electronics from "Ecole Nationale Polytechnique" of Algiers (ENPA), Algeria, in 1982, an M.Phil. degree in electrical engineering (VLSI design for signal processing) from the University of Newcastle-Upon-Tyne, U.K., in 1988, and an Ph.D.

degree in electrical engineering (computer vision) from the University of Nottingham, U.K., in 1992. From 1992 to 1994, he worked as a Research Developer in telesurveillance and access control applications. In 1994, he joined Queen's University Belfast, Belfast, U.K., initially as Lecturer in computer architecture and image processing and later on he was promoted to Reader in Computer Science. He is now a full Professor in Image Engineering and Security and leads the Computer and Electronic Security Systems Group at Northumbria University at Newcastle (UK), and his research interests are in imaging for forensics and security, biometrics, homeland security, image/video watermarking, cryptography and mobile and visual computing. He has authored and co-authored more than 300 publications and one research book on imaging for forensics and security. Prof. Bouridane is a Senior Member of IEEE.