Women's College For
Arts, Science and Education
Ain Shams University
Physics Department

STUDY OF STEGANOGRAPHY TECHNIQUES

THESIS

Submitted for the Degree of
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بسم الله الرحمن الرحيم

﴿ الحمد لله الذي هدانا لهذا و ما كنا لنهتدي لولا أن هدانا الله ﴾

صدق الله العظيم

جزء من الآية (43) – سورة الأعراف

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*First and foremost thanks to **Allah**, the most compassionate and the most merciful.*

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DEDICATION

I would like to dedicate this thesis to my mother, my father, my sisters and my brothers who provide me with love, care and support.

PUBLISHED WORK

1. Anwar.E.Ibrahim, Marwa A. Elshahed and Taha Ibrahim Elarif, " Video Steganography Using P-Frame Motion Vector ", International Conference on: Communication, Management and Information Technology ICCMIT, Calabria University, Cosenza, Italy,2016,(accepted).

2. Anwar.E.Ibrahim, Marwa A. Elshahed and Taha Ibrahim Elarif, " Steganography in Motion Vectors of a Compressed Video", Egyptian Informatics journal, (under publication).

3. Anwar.E.Ibrahim, Marwa A. Elshahed and Taha Ibrahim Elarif, " Video Steganography using Least Significant Bit In Frequency Domain", International Journal of Intelligent Computing and Information Science, (accepted).

ABSTRACT

The rapid development in both computer technologies and internet made the security of information one of the most important factors of information technology and communication. Steganography has emerged as a powerful and efficient tool which provides a high level for security. Steganography is an area of information security that aims to hide a secret message within a carrier. The term steganography comes from the Greek words stegano (cover) and graphy (write). As result a steganography literally means covered writing. Depending on the media in which we hide the data, Steganography is classified as text, image, audio, video or protocol.

In this thesis, we apply a steganography algorithm that uses the motion vectors as a carrier to embed the secret information. From the results we conclude that the higher the threshold the lower degradation is obtained, also we found that the embedding capacity is inversely proportional to the threshold. By increasing threshold the number of selected frames for the embedding process increase but this depends on the dataset itself. We found that at constant threshold, the less the number of the selected blocks, the large the number of frames needed for the embedding

process, the quality of the stego frame increases and low degradation is obtained.

Also we present a proposed video steganography algorithm in the frequency domain. It was applied to two datasets to study the effect of selecting red, green and blue band on the quality of stego frames. From the results we found, the quality of the stego frames after data embedding into red channel, green channel and blue channel depends on the nature of the dataset (the frequency values of pixels).

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