

ABSTRACT

As technology progresses, a huge volume of data is being transmitted over Internet. However, illegal data access has become more prevalent in these communication networks. Information such as text and multimedia data like images are frequently being transmitted over the internet for several applications. Document storage system, military image database and medical imaging systems are some of the applications that contain images with confidential information. It is necessary to protect these information from unauthorized access. Several attempts have been made to safeguard the data from illegal access. One such attempt is the development of Visual Cryptography (VC).

VC techniques involves encoding of the secret image into n share and transmitting only some shares. Superimposing these shares produces the original image back. Based on this concept, VC protocols have been developed in this research work to transmit the secret messages/images (SM) over the internet, securely.

In this work, two techniques namely Error Reduction (ER) and Dynamic Error Reduction (DER) that support the protocols are designed and developed. These techniques are used to reduce the errors induced in the encryption process. Hence, quality of these images can be ensured. Three protocols are developed for secured transmission using ER or DER techniques.

- (i) Semantic Visual Cryptography Protocol (SVCP) is designed and developed to transmit single Gray scale SM (G-SM).

- (ii) Verifiable Secret Image Sharing (VSIS) protocol is developed to transfer the Color SM (C-SM) such as medical images in an efficient manner.
- (iii) Multi-secret Semantic Visual Cryptographic Protocol (MSVCP) is developed for securely transmitting more than one G-SM.

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