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IMAGE ENCRYPTION BY CIPHER FEEDBACK MODE

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Abstract. *Image encryption is one of the most important applications in transferring images through the internet and cellular phones, as well as being important in encryption of the satellite images. The cipher feedback mode (CFB) used in testing, its efficiency in image encryption. Five images are used in the testing with different block sizes, the highest degree of encryption obtained, when the input data block and the feedback blocks are of the same sizes, by using blocks of 8 bits, 16 bits, and 32 bits. The entropy is used to measure the distribution of the image gray levels after encryption, where the CFB mode of encryption gives entropy approximately (8) which is represented the optimal degree of encryption (for image of* $2^8 = 256$ *gray level, as the pixels values in the image are distributed among more gray levels the entropy increase), with the size of the input block and the feedback block are of the same sizes.*

Keywords: Cipher feedback block, Image encryption, Image processing, Internet security, Information storage and retrieval

1. **Introduction.** The amount of visual information available in digital format has grown exponentially in recent years. Retrieving particular images in a way that is both effective and efficient remains an open problem [1]. With the further development of multimedia technologies and the rapid spread of computer networks [2,3], the rapid development of computer communication and the Internet makes it very easy to loose exchange data via networks [4].

Internet and wireless networks offer powerful channels to deliver and exchange images. The increased popularity of image exchange places a great demand on efficient image storage and transmission techniques. The major hurdle for allowing much broader access of digital images lies in how to make sure that an image is used for its intended purpose by its intended recipients. Sensitive and confidential information is vulnerable to various kinds of misuse when data in or transmitted to/from computer system, then the development of secure management usage of digital images becomes one of the important applications in image processing.

The wide use of digital images and videos in various applications brings serious attention to the security and privacy issues today. Many different encryption algorithms have been issues today. Many different encryption algorithms have been proposed in recent years as possible solutions to the production of digital images and videos. Security of digital imagery is gaining in importance and is necessary to enable the e-commerce of digital imagery [5,6].