PREFACE

This thesis presents an image authentication method for digital images. The idea is to fabricate an authentication system which authenticates the digital image. The need for this type of scheme is to secure the digital image before sending it over a two way state channel. The digital image which is taken can be of any type, format, size etc. After selecting a digital image, transformation is done to make it of a fixed size, the mean projection and quantization is to be done. After then on this digital image a Slepian-Wolf coding (regular low density parity check code) is to be applied which encodes the digital image. And at the same time encryption is to be done on the projected converted image on which a conversion is done. The sender then sends the digital image with its encoded and its encrypted form through a two way state channel to the other end.

The proposed method is based on distributed system. On the receiver side a reverse process is to be applied to check the authenticity of the digital image. The digital image which is received on which the transformation of the digital image is to be done then its mean projection and quantization is done after that a non regular low density parity check matrix is to be applied on the projected image and at the same time using the encoded digital image which is received decoding is done. Then conversion is done on the decoded image while a decryption is done on the encrypted image.

The image authentication system is recommended in which authentication is done at the one side and authenticity of the image is checked on the other side. In this work conversion, mean projection and quantization, low density parity check codes and a data encryption scheme is used for the process. A Non Regular Low Density Parity Check Matrix is used for both encoding and decoding the image.

The implementation of this work is done using MATLAB which is a high-performance language. As shown in figures in this thesis at the server end the user has to log in through an interface with the help of his user name and password respectively. The user name and password are again will be the unique one for this system and if there is some security issues relating to the user name and password the administrator can change both the user name and password of the system. When the user log in successfully into the system another graphical user interface will pop up this will ask to browse the digital image from any database of any size, quality, format etc.
The results for different image are compared and it is seen that if the image is original without any single bit or single pixel distortion the system checks the authenticity of the image and gives the result as the image is validate the system. The use of non regular low density parity check codes and the encryption methodology makes sure the authenticity of the image, and if the image is found to be unauthenticated it will give the result accordingly. So the system is useful in many applications such as defence, medical, scientific etc. purposes. This method gives the better performance in all aspects in comparison to the previous work.