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# SECURITY SYSTEM FOR VIDEO CAPSULE ENDOSCOPIC IMAGES BASED ON IOT

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*Abstract*—— Nowadays the endoscopic images captured through video capsule endoscopy is less accurate and high noise. So it is difficult for a doctor for better diagnosis. The captured endoscopic images are less secure so it is easy for unauthorized users to misuse the data. So there is a need for encryption of image**.** The main challenge in video capsule endoscopic system is its security. In this paper, a data compressor for video endoscopy application is presented. The algorithm consists of Golomb Rice coding. Produces output which have compression ratio of 80% and very high peak signal-to-noise ratio (over 36dB).

***Keywords— YUV,Golomb rice code,PSNR,compression ratio***

## I. INTRODUCTION

Wireless capsule endoscopy is a state of the art technology to receive video of human intestine for medical diagnostics. In this technique, the patient ingests a specially designed electronic capsule which has imaging and wireless circuitry embedded inside. While the capsule travels through gastrointestinal(GI)tract, it captures images and send them wirelessly to an outside data recorder(or storage device);these images are later down added into workstation [personal computer (pc)] where they are reconstructed and displayed on a monitor for medical diagnostics. We use an algorithm golomb-rice coding (a loseless data compression method introduced by golomb _Rice coding).Based on the nature of endoscopic images, several sub sampling schemes on chrominance components are applied. This scheme is capable of working with any commercial low-power image sensors that outputs image pixels in a raster scan fashion. The proposed scheme has low computational complexity and it is simple to implement.

The currently used method for reconstructing the video capsule endoscopic images have low security, less accuracy, Less PSNR ratio and high computational complexity. The proposed system solves problems of existing system.

The currently used Method for reconstructing the endoscopic image is low secure and the processed image has low accuracy.So to overcome this we proposed a method that has high secuirity,high accuracy,high psnr(over 36dB) and low computational complexity.

The proposed system is a Hitech system. The peculiarities of this system is that it requires less human effort,less complexity etc.One of the main advantage of the proposed system is that it is accurate and more over it is based on loseless compression so that there will be no data loss. It has a good PSNR value which can be the maximum PSNR value for an 8bit image. Moreover the compression ratio is in the range 85 to 90. In this system the data will be highly secure. Another advantage is that we are using the latest Hitech technology IOT for sending the endoscopic image and receiving its various parameters

## II. SYSTEM DESCRIPTION

In this system endoscopic images captured through video capsule endoscopy is encrypted. The encrypted image is decrypted for further diagnosis.At first the oginal image is send to cloud and is received from cloud for encryption. The received image from cloud is first converted into YUV format. The image in the yuv format is encrypted using rice-coding.The encrypted image is decrypted using reverse ricecode algorithm.The decrypted image will be in YUV format. So it is converted into RGB format. Then the psnr ratio and compression ratio is calculated and send to cloud.

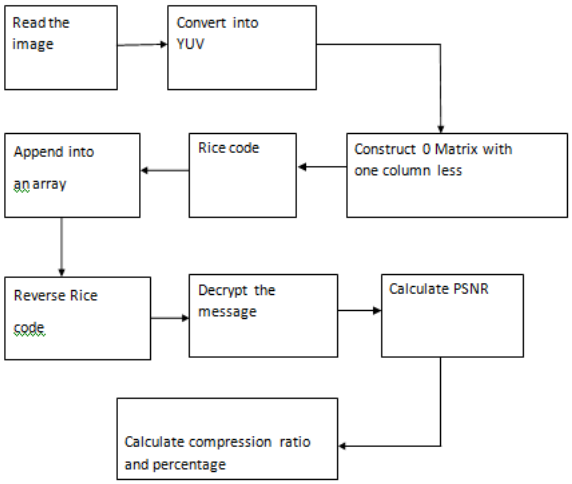


Figure 1. Block Diagram of the proposed system

## III.SCOPE

Our proposed system aims at securing the images captured by video capsule endoscopy through encryption. Since encryption is done the endoscopic images have more accuracy and less noise ratio.so it becomes easy for the doctors for diagnose.so the proposed system will be very helpful in the medical field.

## IV.CONCLUSION

In this project,an optimal compression algorithm was prposed that is specially designed for wireless video capsule endoscopic application. The algorithm was developed around some special features of endoscopic images such as color homogeneity,absence of bluish component ,and others. The reconstructed images were of high quality (ie PSNR of over 36 dB) and with compression ratio percentage in the range 85 to90.

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