Sl No		Particulars
1	Name of the Candidate	Dr. Nagaraju C
2	Address of the parent institution	BGS Institute of Engineering, B G Nagara, Mandya, 571448
3	PhD Thesis Title	Development and Performance Study of Novel algorithms to Embed Patient Information in Medical Images
4	Research guide Name	Dr. S S Parthasarathy
	Department and Designation	Dept. of E&E, Professor
5	Date of Registration for PhD	20 th AUG 2010
	University /Branch	University of Mysore, Electronics
6	Date of Award of PhD degree	21 st OCT 2015

7 <u>Brief synopsis</u>

Recently, Medical image watermarking is an appropriate method suggested by the researchers as a solution for embedding diagnosis report with medical image for enhancing security and authentication of medical data. Embedding patient data such as patient information and bio-signals in medical images and advantage of data security with efficient memory utilization can be done through a traditional method using medical image watermarking techniques. If the capacity of the information embedded inside the medical image is more, it results degradation in embedded image. Hence development of a new technique is required to embed maximum information in medical images at the bit level rather than at the pixel level in order to trade off the drawbacks of earlier methods.

The main problem addressed in this thesis is embedding high volume of data in the medical images, embedding patient information and bio-signal, compression using pixel rotation and finally the impact of noise on medical images.

In the present work high volume of patient information is embedded in medical image using Local Ternary Pattern (LTP). Along with the enhancement of embedding capacity, LTP is used for the encryption of patient information, to provide more security. The proposed method provides enormous embedding capacity with permissible visual degradation, high security and accurate recovery of patient information.

Embedding of patient information in medical image is not sufficient to analyze the condition of the patient. Electro Cardio Gram (ECG) is the one of the important biosignal which gives status of the patient to the doctors. Hence in this research a novel algorithm is implemented to develop a technique to embed Patient data (patient information and ECG) in medical images.

In addition to the embedding process a novel technique on compression has been devised in this work. Medical imaging is used to produces excessive amounts of image data. Along with this, huge amount of patient data has to be embedded in medical image. So compression is necessary for storage and communication purposes. The proposed compression method is based on rotation of the pixel. This technique plays an important role in the transmission and storage of image information. This technique is applicable for medical image with patient information and even along with ECG signal. The research work is a lossless compression in maintaining the quality of the medical images and patient data is recoverable without distortion.

In medical image processing, various types of noises corrupt the image quality due to the embedding and transmission. It is very important to obtain precise images to facilitate accurate analysis and estimation of noise in embedded medical image. Instead of studying impact of noise on medical image, the current work is focused towards studying the effect of specific noise which affects particular medical image modality. The proposed embedding techniques used for hiding patient information in medical images are highly robust against compression and attacks.