# A NEURALNETWORKMETHOD FOR EFFECTIVE MEDICAL IMAGE RETRIEVAL

[*1]G.Chinna Narasimhulu, [2]Y.MuraliMohanbabu
[1]Lecturer, ECE Dept., Government Polytechnic for Women, Kadapa, A.P., India.
[2]Professor, ECE Dept., SVCET, Chittoor, A.P., India.
Email - [1]kisnamohanece@gmail.com

***Abstract:*** *This paper presents an adaptive methodology for medical image retrieval using varies rotations. Dominant rotated local binary pattern (DRLBP) has been tested in last few years in matching the images and is good choice to check for retrieval of medical images. The dominant rotation direction is considered, when the index of difference in distance of central pixel and neighbouring pixel is maximum. The direction of dominant path is considered in circular path and assigned the weights with the help of the dominant path. Because of the having dominant path direction, this gives faster, easy and efficient results in retrieving process. Various features of the query image and data images have to be compared in the dominant direction to conclude a best suited image or images to query image.*

***Keyword:*** *Local Binary Patterns, Rotation, Dominant, Features, Image retrieval.*

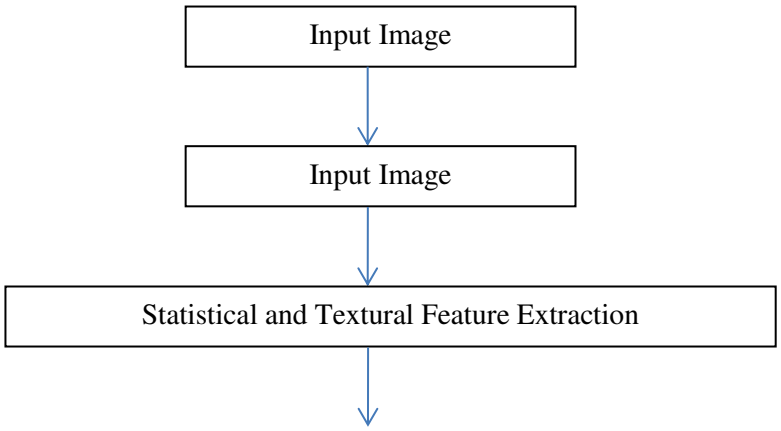
## 1. INTRODUCTION:

The feature extraction, indexing, feature extraction of query image, extraction comparing the query image feature with feature data base for optimum, quality report by the user are the basic procedure for Content based image retrieval [1-2]. Feature extraction [3-4] is playing important role in content based image retrieval (CBIR). In CBIR system primitive feature [5-6] defines colour, shape on the other hand domain specific feature concentrates on texture features, face recognition, finger prints recognition etc.,

Multi-object images with Geometry-based image retrieval system are developed in [7]. In this curvature tree (CT) is used for the image objects to modelling the shape and topology. Maximum similarity sub tree isomorphism (MSSI) problem is used to find the similarity index. The image object relationships are depends on the hierarchy of the CT reflects. The similarity between two multi-object images is measured based on MSSI between their CTs. The respective nodes of CTs facilitate shape-based matching, triangle-area representation of each object. Dynamic programming algorithm [8] used to measure the similarity between the attributed nodes and to solve the MSSI problem recursive algorithm is employed.

Many applications which use evidence based medicine for Image retrieval in medical applications (IRMA) is explored in [9]. The IRMA retrieval process concentrates on following procedure. Each image section imaging methodology is done by Categorization. Registration process explains transformation parameters arrangement relates to image probable classes and used at abstraction higher layers. Every pixel feature value is given in feature extraction. Abstraction process explains feature selection of image category and query context. Produced and selected image features deliberation handled by indexing process, leads for a compact image description [10]. The identification step provides linking of medical a-priori knowledge to certain similar clustered image parts generated during the indexing step. A general CBIR approach for medical images presented by IRMA. IRMA gives appropriate human image databases from consolidated central database which uses distributed system architecture.

## 2. PROPOSED METHOD



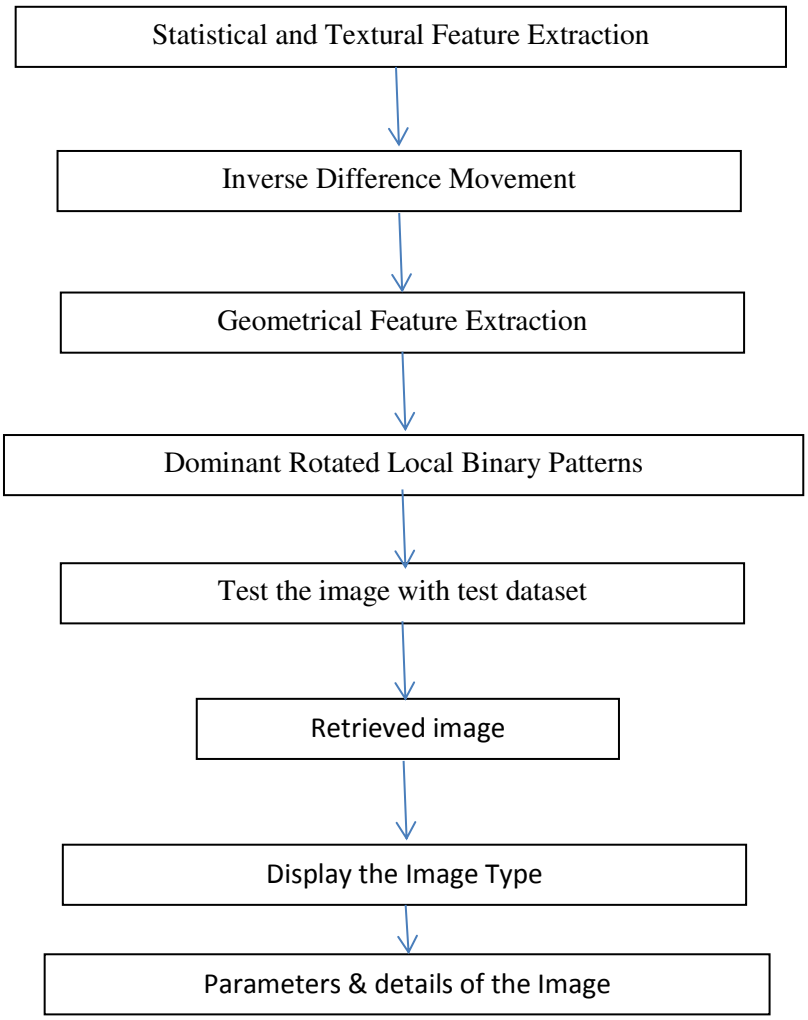
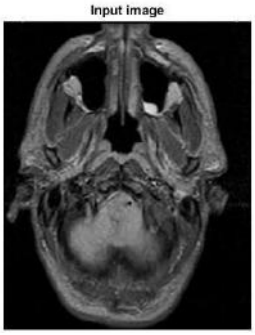
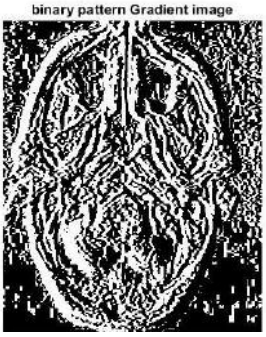
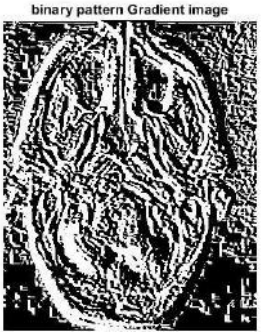
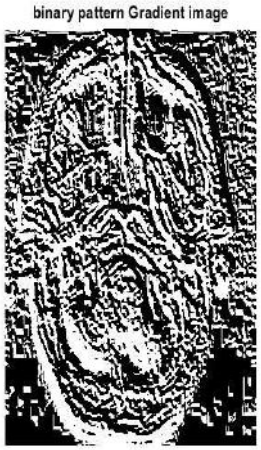
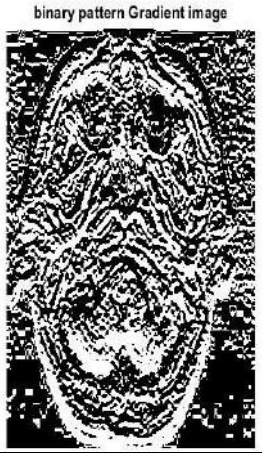
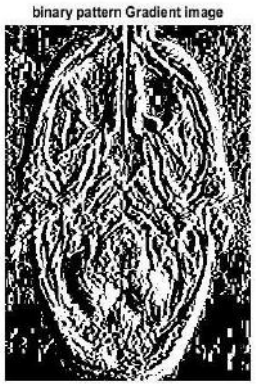
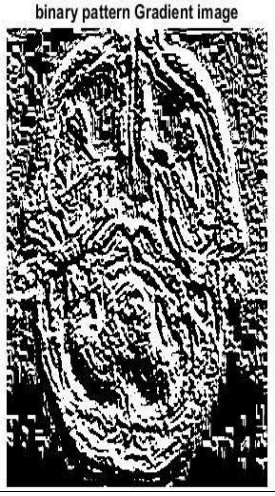
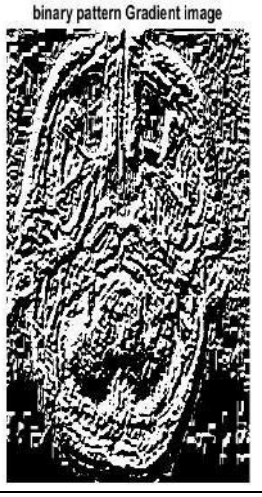



Figure 1: Flow chart of the proposed method

The general rotated local binary pattern is having the problem of deviations to rotations in local binary pattern comes with setting of the weights to a fixed value. Here it is proposed an adaptive method for weight arrangement with local or resident calculated orientation path. Compared with gradient calculation and pixels differentiation, the dominant direction rotated local binary patterns can give better results. With this the computation of similarity is easy and time saving. In this dominant method as shown in figure 1,statistical and textural feature extraction have been evaluated for the taken medical images. These features are generally like mean, standard deviation, skew ness, variance, entropy, energy, correlation, root mean square value, contrast, kurtosis, etc. Difference movements have been calculated. Geometrical features like area, perimeter, circularity, centroid and Centroid mid-point have been evaluated. Rotated Local Binary Patterns and dominant Rotated Local Binary Patterns have been measured for comparing the query image with data base features. The best suited values image can be taken as retrieved image from the given data base. The image types like X-ray image, magnetic resonance image, computed tomography scan image, ultrasound image, mammograms, etc. can be displayed and features or parameters of the taken or retrieved image along with details of the retrieved image, if any saved can be displayed.

## 3. RESULTS AND DISCUSSION

A suitable and noiseless medical query has been considered for retrieving process. The image has been enhanced with pre-processing techniques. As discussed above, the statistical, texture and area features have been evaluated. Dominant direction has been evaluated by rotating with different suitable angles as shown in figure 2. The histogram of DRLBP has shown in figure 3. In the dominant rotation direction, the evaluated features of the query image have been compared with given data base images. The best suited image is considered as retrieved and is shown in figure 4. The table1 shows the statistical values of different features that were calculates for query image.

| | | | |
|---|---|---|---|
|   |   |   |   |
| A. Input Image | B. Enhanced Image | C. Binary Pattern Gradient Image | D. Binary Pattern Gradient Image |
|   |   |   |   |
| E. Binary Pattern Gradient Image | F. Binary Pattern Gradient Image | G. Binary Pattern Gradient Image | H. Binary Pattern Gradient Image |
|   |   |   |   |
| I. Binary Pattern Gradient Image | J. Binary Pattern Gradient Image | K. Binary Pattern Gradient Image | L. Binary Pattern Gradient Image |
|   |   |   |   |
| M. Binary Pattern | N. Binary Pattern | O. Binary Pattern | P. Binary Pattern |

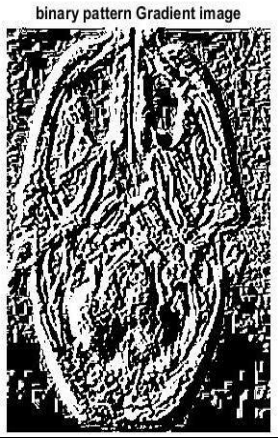
| Gradient Image | Gradient Image | Gradient Image | Gradient Image |
|---|---|---|---|
|   |   |   | |
| Q. Binary Pattern Gradient Image | R. Binary Pattern Gradient Image | S. Rotation InvariantLBP Texture | |

Figure 2: Different stages of the proposed method for given medical query image

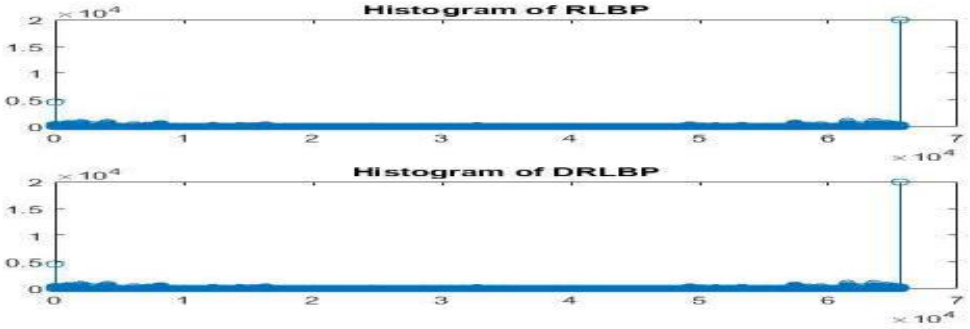



Figure 3: Histograms of Rotated Local Binary Pattern and dominant Rotated Local Binary Pattern

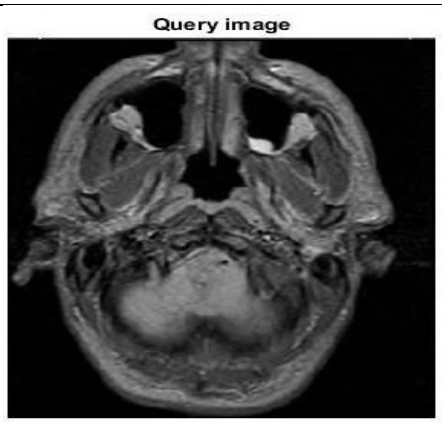
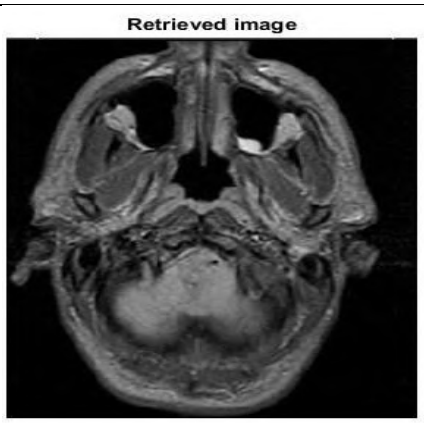
| | |
|---|---|
|   |   |
| A. Input query image | B. Retrieved image |

Figure 4: input query and output retrieved images

Table 1: Different features of the input medical query image

| S.NO | Parameter | Value |
|---|---|---|
| 1 | Contrast | 0.3230 |
| 2 | Correlation | 0.9687 |
| 3 | Energy | 0.1806 |
| 4 | Homogeneity | 0.8741 |
| 5 | Mean | 81.9966 |
| 6 | Standard Deviation | 77.7027 |
| 7 | Entropy | 6.1363 |
| 8 | Root Mean Square | 12.3067 |
| 9 | Variance | 4.1596 e+03 |

| | | |
|---|---|---|
| 10 | Smoothness | 1.0000 |
| 11 | Kurtosis | 1.9333 |
| 12 | Skewness = | 0.4502 |
| 13 | IDM | 255 |
| 14 | Area | 79665 |
| 15 | Perimeter | 3.1770e+03 |
| 16 | Circularity | 4.9354 |
| 17 | Centroid Mid Point(X) | 118.1801 |
| 18 | Centroid Mid Point(Y) | 241.1049 |

## 4. CONCLUSION:

The dominant rotation local binary patterns method is an adaptive method to retrieve the image from given database. It has been verified for different varieties of medical images like X-ray image, magnetic resonance image, etc. It has given the best images which are very much nearer to the original image. It is very much useful to a doctor to take decision based all the histories of the best suited images to query image. The explained method has given appreciable quality parameters like overall accuracy including producer and user accuracies, specificity, recall, kappa, etc. to say that it is one of the very good methods in this area.

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