SURF serves better results for Brain Tumor Classification

Nitish Zulpe[1] and Vaijinath V. Bhosle[2]
1 Computer Science,
[1]College of Computer Science and
Information Technology, Latur-413512
Maharashtra, India
nitish.Zulpe@gmail.com
2 Computer Science,
College of Computer Science and Information Technology (COCSIT),
Latur, Maharashtra, India,
vvbhosle80@gmail.com

Abstract
Automatic recognition system for medical images is challenging task in the field of medical image processing. Medical images acquired from different modalities such as Computed Tomography (CT), Magnetic Resonance Imaging (MRI), etc which are used for the diagnosis purpose. In the medical field, brain tumor classification is very important phase for the further treatment. Human interpretation of large number of MRI slices (Normal or Abnormal) may leads to misclassification hence there is need of such a automated recognition system, which can classify the type of the brain tumor. In this research work, we used four different classes of brain tumors and extract feature using SURF. this algorithm can detect and define local features for any interest object and extract features or descriptor points from it and compare these features/ descriptor by the features that extracted from origin image, matching process has been done among features and decision made based on similar features found, this algorithm called Speeded Up Robust Features (SURF) algorithm. Speeded up Robust Features from each class, and applied to two-layered Feed forward Neural Network, which gives 97.5% classification rate.

Keywords: MRI, CT, GLCM, Neural Network

I. INTRODUCTION

Abnormal growth of cell in the brain causes the brain tumor and may affect any person almost of any age. Brain tumors can have a variety of shapes and sizes; it can appear at any location and in different image intensities [1]. Brain tumor classification is very significant phase in the medical field. The images acquired from different modalities such as CT, MR that should be verified by the physician for the further treatment, but the manual classification of the MR images is the challenging and time consuming task [2]. Human observations may lead to misclassification and hence there is need of automatic or semiautomatic classification techniques to make the difference between different tumor types.

We found many classification techniques have been given for the determining the tumor type from the given MR images such as, Matthew C. Clarke et al. [3] developed a method for abnormal MRI volume identification with slice segmentation using Fuzzy C-means (FCM) algorithm. Chang et al. [4,5] reported the SVM is an best tool in sonography for the diagnosis of

Breast cancer. W. Chu *et. al.* [6] proposed that LS-SVM generally are able to deliver higher classification accuracy than the other existing data classification algorithms.
In medical image analysis, the determination of tissue type (normal or abnormal) and classification of tissue pathology are performed by using texture. MR image texture proved to be useful to determine the tumor type [7]. H. Bay. [8] Suggested a Speeded up Robust Features "SURF" algorithm is a local feature and descriptor algorithm that can be used in many application such as object recognition
The process of Speeded UP Robust Features "SURF" algorithm can be divided into three main steps. First step is "Detection step", in this step interest points are selected at distinctive locations in the origin image, such as corners, blobs and T-junctions and this process must be robustly.

Second step is "Description step", in this step interest points should have unique identifiers does not depend on features scale and rotations which are called descriptor, the information of interest points represented by descriptor which are vectors that contain information about the points itself and the surroundings. Third step is "Matching step", in this step descriptor vectors are compared between the