Chapter 54
Enchodroma Tumor Detection From MRI Images Using SVM Classifier

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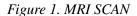*New Prince Shri Bhavani College of Engineering and Technology, India*

ABSTRACT

Magnetic resonance imaging is a standard modality used in medicine for bone diagnosis and treatment. It offers the advantage to be a non-invasive technique that enables the analysis of bone tissues. The early detection of tumor in the bone leads on saving the patients' life through proper care. The accurate detection of tumor in the MRI scans are very easy to perform. Furthermore, the tumor detection in an image is useful not only for medical experts, but also for other purposes like segmentation and 3D reconstruction. The manual delineation and visual inspection will be limited to avoid time consumption by medical doctors. The bone tumor tissue detection allows localizing a mass of abnormal cells in a slice of magnetic resonance (MR).

INTRODUCTION

Medical image processing is an important field of research as its outcomes are used for the betterment of health issues. A tumor is an abnormal growth of tissues in any part of the body. As the tumor grows, the abnormal tissue displaces healthy tissue. There is a large class of bone tumor types which have different characteristics. There are two types of bone tumors, Noncancerous (Benign) and Cancerous (Malignant). The benign tumor grows very large and press on nearby tissues, once removed by surgery, they don't usually reoccur. Malignant tumor has a larger nucleus that looks different from a normal cell's nucleus and can also reoccur after they are removed. Hence care as to be taken in order to completely avoid tumors. There are different image modalities like X-ray, MRI, CT, PET SCANS has shown in figure 1.1. The MRI imaging technique is the best because it has a higher resolution. Magnetic resonance imaging (MRI) is a non-invasive medical system used to show 2D images of the body. This technique is based on a process that uses highly charged magnetic fields and radio waves to make images of the inside the body. It is an unharmed method of obtaining images of the human body. Its data are most relevant and it helps in early detection of tumors and precise estimation of tumor boundaries. Magnetic resonance (MR) sequences such as T1-weighted, T2-weighted, contrast-enhanced T1W and T2W, STIR (Short T1 inversion recovery), PD-Weighted series provide different information. Thus MRI scans have a best non-invasive medical systems used to show 2D images of the body. This technique is based on a process that used highly charged magnetic fields to make images of the body. Hence MRI has more than one methodology to classify images. These are atlas methods, shape methods, fuzzy methods, and variations methods. New technology MRI are T1 weighted, T2 weighted and proton density weighted images.

The rest of the paper includes section 2 gives the brief glimpse of the relevant work that was carried out all in the various fields of research. Section 3explains segmentation process -thresholding and morphological operations. Section 4 includes the proposed method with results and experimental results. Section 5 includes the conclusions followed by future enhancements.

Figure 1. MRI SCAN

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