Machine Learning Approach for Brain Tumor Detection

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Abstract

The main organ in human nervous system is human brain which is located in human head and covered by skull. The function of the human brain is to control overall parts of the human body. It is a kind of appendage which can co-ordinate other organs and can assign the duties for them.Figure 1.1 shows the general parts of the human brain, Whereas the major parts occupies the human brain are the brain stem and the cerebrum. The cerebrum was the largest part of the brain. The cerebrum can responsible for the emotions. There are two halves in a cerebrum that controls the contrary side of the body. Each of the halves comprising the four lobes. Cerebellum occupies the major part next to the cerebellum. In recent years, brain tumor detection and segmentation has created an interest on research areas. The process of identifying and segmenting brain tumor is a very tedious and time consuming task, since human physique has anatomical structure naturally. The main objective of this project work is to detect the brain tumor, this work proposed a computerized method for the segmentation and identification of a brain tumor using the Convolution Neural Network. The input MR images are read from the local device using the file path and converted into grayscale images. These images are pre-processed using an adaptive bilateral filtering technique for the elimination of noises that are present inside the original image. The binary thresholding is applied to the denoised image, and Convolution Neural Network segmentation is applied, which helps in figuring out the tumor region in the MR images. The proposed model had obtained an accuracy of 84% and yields promising results without any errors and much less computational time.