Design and Analysis of Brain Tumor Detection System using Convolutional Neural Networks in MRI Images

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***Abstract*— The brain tumors are the most general and confront disease in today's world which make the human lifespan very short. So, the early detection of the brain tumors are utmost important. Machine learning algorithm such as neural network plays a very important role in the field of human healthcare system. This role is increasing day by day which leads to reduce human judgements in diagnosis of disease. Thus, the error has occurred in the human diagnosis can be reduced. Generally various types of medical imaging techniques like Magnetic resonance imaging (MRI), Computed Tomography (CT or CAT) scan are used for detecting the tumors in the brain. As in MRI gives huge amount of information so for our proposed work we have used some brain MRI images as our data set for training and testing case. This research paper basically focuses on how to detect the invasive brain tumors from the MRI images that is takes as an input from the data set. As the Convolutional Neural Network (CNN) is most effective classification algorithm so we have used CNN algorithm which will give maximum accuracy and less time complexity. For this system we have used some pre-processing technique on the input image, then segmentation is done and extract the features from that and finally compare the testing input image data with the training data with CNN classifier and got the desired output and classified the image very accurately.**

Keywords*— *Machine Learning, Healthcare, Convolutional Neural Network (CNN), Magnetic resonance imaging (MRI), Classification, Pre-processing, Accuracy