

Abstract

Tumor is a condition in which the growth of tissue in the body becomes abnormal. According to the Global Cancer Observatory in 2020, the worldwide incidence of brain tumors was 308,102, with the highest percentage occurring in Asia (54.2%). Symptoms of brain tumors are characterized by headache and other neurological symptoms such as seizures, nausea/vomiting, personality changes, papilledema, blurred vision. Currently, brain tumors are detected using MRI and CT scans. However, the accuracy of these two conventional detection models only reaches 30% due to the limited area and images in the brain where the cells are similar to each other so that the chance of failure reaches 70%. The above problems may be faced with computational programs in detecting brain tumors using computational programs such as machine learning but have limitations in their small scope making it difficult to process big data. In addition, the use of MRI method in detecting complex brain tumors requires complicated equipment. So, the solution is deep learning which is more flexible in detecting brain tumors, unfortunately deep learning requires a lot of input data to work effectively. Researchers here have a solution in the form of Neurodetect which is software that can be accessed via a smartphone with various features such as checking brain tumors and advanced information or information on brain tumors that have been checked. In addition, researchers also chose to use deep learning methods with the KNN (K-Nearest Neighbor) and CNN (Convolutional Neural Network) algorithms because they can function in classifying data before program training to reduce the risk of data loss or underfitting. As for here researchers use various models such as VGG-19, SVM, KNN to increase accuracy by 98%.

Keywords: Magnetic Resonance Image (MRI), Brain Tumor, Deep Learning