AIML

Identifieng brain tumer using MRI scans

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* A brain tumor is one aggressive disease. More than 84,000 people will receive a primary brain tumor diagnosis in 2021 and an estimated 18,600 people will die from a malignant brain tumor (brain cancer) in 2021.[8] The best technique to detect brain tumors is by using Magnetic Resonance Imaging (MRI). More than any other cancer, brain tumors can have lasting and life-altering physical, cognitive, and psychological impacts on a patient’s life and hence faster diagnosis and best treatment plan should be devised to improve the life expectancy and well-being of these patients. Neural networks have shown colossal accuracy in image classification andsegmentation problems.  
    
  In this project, we propose comparative studies of various deep learning models based on different types of Neural Networks (ANN, CNN, TL) to first identify brain tumors and then classify them into Benign Tumors, Malignant Tumors, or Pituitary Tumors. The data set holds 3260 images on T1-weighted contrast-enhanced images that were cleaned and augmented. The best ANN model concluded with an accuracy of 78% and the best CNN model consisting of 3 convolution layers had an accuracy of 90%. The VGG16 (retrained on the dataset) model surpasses other ANN, CNN, and TL models for multi-class tumor classification. This proposed network performs significantly better with a validation accuracy of 94% and an F1-Score of 91.