ABSTRACT

This proposed research work consists of classification, pre-processing, feature extraction, and segmentation processes that are used to identify and classify the various brain tumor images. By using Magnetic Resonance Images (MRI) based brain tumor detection is not as much easier for clinical diagnosis since it provides direct information about anatomical structures along with potentially unusual tissues where the patients are being monitored by the clinicians. A 'Kaggle' open access dataset is being taken in this proposed system which has been used to obtain the brain MRI images. Kaggle permits clients to discover and distribute informational indexes, investigate and construct models in an electronic information science environment along with other information researchers and AI designs, and enter rivalries to solve information science challenges. This dataset of MRI images are being used by most of the researchers for their brain tumor detection research since these images are no-copyright access. However, this Kaggle dataset brain images are having an image resolution of 256*256 pixels by its width and height respectively. The two independent radiologists were used to verify the quality and resolution of the given image.

A machine learning approach is being used in this proposed system which is used to detect and segment the glioma tumors in the brain region. The boundary edge pixels are detected by using Kirsch's Edge Detectors (KED) edge detected pixels. Then, the ridgelet transform is applied to this enhanced brain image to obtain the ridgelet multi-resolution coefficients. Further, features are derived from the ridgelet transformed coefficients and the features are optimized using CANFES classifier. The resulting outcome is analyzed for tumor detection in terms of evaluation parameters such as; sensitivity, specificity, and accuracy. By using programming tools like MATLAB, the existing and the proposed technique are implemented through simulation results, and the performance of the proposed technique is compared with the existing method whereas to prove the effectiveness of the proposed algorithm. The 98.73% accuracy which gives

exact detection of the tumor for the proposed tumor detection techniques using Co-Active Adaptive Neuro-Fuzzy Expert System Classifier, which is to be considered as higher than the existing conventional techniques.