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Binary swallow swarm optimization with convolutional neural network brain tumor classifier for magnetic resonance imaging images

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The brain tumor classification is implemented through biopsy, which is not normally executed before classic mind surgery. Machine learning (ML) algorithms assist radiologists in tumor analysis, not including obtrusive evaluations. The conventional ML strategies need separate feature extraction to tumor detect thus it needs more computation time to perform classification. Deep learning (DL) based convolution neural networks (CNNs) have been focused on brain tumor detection. In this paper, the CNN algorithm is improved based on meta-heuristics, which are used for pre-trained systems for databases to categorize MRI brain tumor images. Pre-trained DL, binary swallow swarm optimization (BSSO) is used for improving the weight and predispositions of the CNN algorithm. It is a block-wise calibrating system which is dependent on transfer learning. The current technique is assessed over a publically accessible magnetic resonance imaging (MRI) brain tumor database containing three categories as glioma, meningioma, and pituitary. Brain tumor is a worthy rate among everyone brain tumor in medical training. The proposed strategy is assessed over T1-weighted contrast-enhanced MRI (CE-MRI) benchmark data. To assess the execution, utilize the proposed strategies to the CE-MRI dataset for tumor detection and in the general execution of the BSSO CNN model is estimated using the execution assessment measurements such as precision, recall, specificity, F1-score, and accuracy. Exploratory outcomes demonstrated with the proposed strategy higher when compared to other methods to all metrics.

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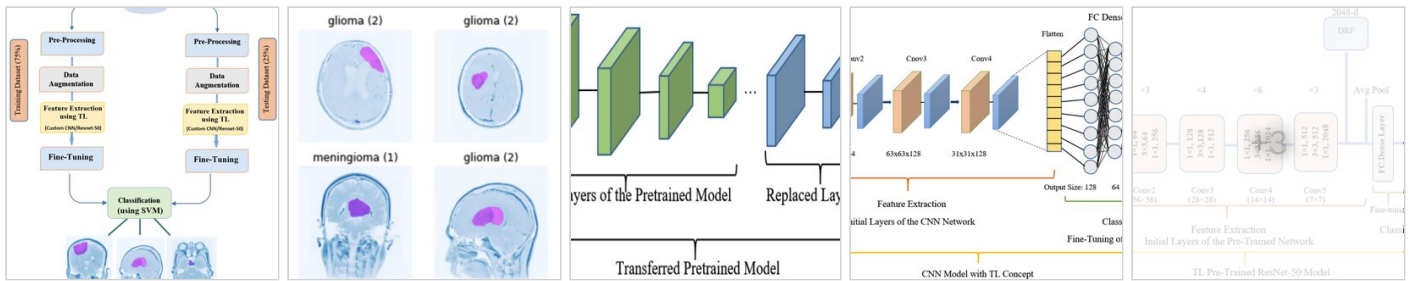
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Brain tumors are the extra buildup of cells in the regions of brain. Any unwanted mass in the brain tissues is termed as tumor. Glioma, meningioma and pituitary tumors are the three main types of tumors. All the tumors are dangerous and cause severe damage when not treated. Proper diagnostic methods include...

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Brain tumors are one of the most fatal disorders owing to the uncontrolled proliferation of abnormal cells inside the brain. Digital images are obtained using Magnetic Resonance Imaging (MRI), which is a medical instrument that can assist doctors and other medical personnel in assessing and diagnosing the presenc...

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