

## **DEEP LEARNING NEURAL NETWORK ARCHITECTURE FOR DETECTION OF TUMOR IN MR BRAIN IMAGES**

Data mining is an emerging technology that helps in retrieving information from large databases. Data mining is complimenting various industries including business, science, medical, education, finance and more. Image segmentation is used with several data mining techniques to diagnose diseases, identify and locate tumors. The back propagation neural network is a classical technique for the detection of tumors. Apart from BPNN, many other neural networks are also there like probabilistic neural network, radial basic function neural network for medical applications. This research work proposes deep learning neural network architecture for the diagnosis of tumors. The DLCNN can process 2D image data as well as speech signals. The evolution of deep learning architecture started in 1965; however, nowadays, it gains prominence for real-world applications like image classification, video classification, natural language processing, visual tracking, and speech recognition.

The CNN is one of the widely used deep learning architectures, and the proposed segmentation algorithm is a fully automatic algorithm and its efficiency relies on the training. The CNN structure mimics the biological structure of animal visual cortex. The CNN gains a prominent role in image and video processing, natural language processing due to the minimal pre-processing required. Prior to segmentation, the preprocessing was performed by min-max normalization. The CNN comprises multiple convolution layers preceded by one or more fully connected layer. The convolution layer is the basic building block of CNN, and it comprises Gaussian kernel masks. The filter mask is convolved with the height and width of the image and generates a feature map or activation map. The convolution layer is followed by rectified linear units (ReLU) layer, and here in this layer, the ReLU function is applied to the feature map. The pooling is a key feature of CNN in which the downsampling is performed. The pooling dimension size is predefined and based on that, the input feature map image was subdivided into rectangles; the maximum value in the sub-block is the resultant value. The fully connected layer is the last layer, and it uses hyperbolic sigmoid as the activation function.

The deep learning neural architecture generates superior results for the diagnosis of tumor in MR brain images.