Brain tumor segmentation is an important procedure for early tumor diagnosis and radiotherapy planning. Although numerous brain tumor segmentation methods have been presented, enhancing tumor segmentation methods is still challenging because brain tumor MRI images exhibit complex characteristics. A novel algorithm for segmentation of brain tumor segmentation is proposed in this work. In this we have used Active contour and an Artificial Neural Network to segment MR Images. Here ANN is used to find the initial contour of the image then the initial contour and the MRI image is used to segment the tumor portion.