

Providing a hybrid approach based on image processing techniques and computational intelligence for diagnosis and classification of brain tumors

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Abstract

Goal of this paper is to Providing a hybrid approach based on image processing techniques and computational intelligence for diagnosis and classification of brain tumors. A brain tumor is a collection, or mass, of abnormal cells in your brain. Your skull, which encloses your brain, is very rigid. Any growth inside such a restricted space can cause problems. Brain tumors can be cancerous (malignant) or noncancerous (benign). When benign or malignant tumors grow, they can cause the pressure inside your skull to increase. This can cause brain damage, and it can be life-threatening. In the method proposed in this article, first the digital images of the brain are subjected to the necessary precessions, then after performing the necessary precessions on the image, the location of the tumor is located using a threshold-based segmentation method, and in the second stage, Is used as a marker in a neural network classification method and ant colony algorithm. The final results obtained in this study show the superiority of the neural network optimization method with ant colony algorithm compared to other methods, in order to diagnose brain tumors with an average accuracy of 99.4%.

Keywords: image processing, computational intelligence, diagnosis, classification, brain tumors