ABSTRACT

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Recent Advances in Classification of Brain Tumor from MR Images - State of the Art Review from 2017 to 2021.

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BACKGROUND: The task of identifying a tumor in the brain is a complex problem that requires sophisticated skills and inference mechanisms to accurately locate the tumor region. The complex nature of the brain tissue makes the problem of locating, segmenting, and ultimately classifying Magnetic Resonance (MR) images a complex problem. The aim of this review paper is to consolidate the details of the most relevant and recent approaches proposed in this domain for the binary and multi-class classification of brain tumors using brain MR images.

OBJECTIVE: In this review paper, a detailed summary of the latest techniques used for brain MR image feature extraction and classification is presented. A lot of research papers have been published recently with various techniques proposed for identifying an efficient method for the correct recognition and diagnosis of brain MR images. The review paper allows researchers in the field to familiarize themselves with the latest developments and be able to propose novel techniques that have not yet been explored in this research domain. In addition, the review paper will facilitate researchers, who are new to machine learning algorithms for brain tumor recognition, to understand the basics of the field and pave the way for them to be able to contribute to this vital field of medical research.

RESULTS: In this paper, the review is performed for all recently proposed methods for both feature extraction and classification. It also identifies the combination of feature extraction methods and classification methods that when combined would be the most efficient technique for the recognition and diagnosis of brain tumor from MR images. In addition, the paper presents the performance metrics particularly the recognition accuracy, of selected research published between 2017- 2021.

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