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Brain tumor detection and screening using artificial intelligence techniques: Current trends and future perspectives

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Abstract

A brain tumor is an abnormal mass of tissue located inside the skull. In addition to putting pressure on the healthy parts of the brain, it can lead to significant health problems. Depending on the region of the brain tumor, it can cause a wide range of health issues. As malignant brain tumors grow rapidly, the mortality rate of individuals with this cancer can increase substantially with each passing week. Hence it is vital to detect these tumors early so that preventive measures can be taken at the initial stages. Computer-aided diagnostic (CAD) systems, in coordination with artificial intelligence (AI) techniques, have a vital role in the early detection of this disorder. In this review, we studied 124 research articles published from 2000 to 2022. Here, the challenges faced by CAD systems based on different modalities are highlighted along with the current requirements of this domain and future prospects in this area of research.

Keywords: Brain tumor; CT; Classification; Deep learning; MRI; Machine learning; PET; Segmentation.