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## BRAIN TUMOR DETECTION AND CLASSIFICATION USING CONVOLUTION NEURAL NETWORK

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### Abstract

Brain tumor is considered as one of the aggressive diseases, among children and adults. Brain tumors grow very fast and if not treated well, the survival chances of the patient are very less. Early detection of brain tumors is very important. Proper treatment planning and accurate diagnostics is at the topmost priority to improve life expectancy of the patients. The best technique to detect brain tumor is Magnetic Resonance Imaging. The MRI images are examined by the radiologist. Manual examination can be error prone due to the level of complexities involved in brain tumors and their properties. Hence an automated brain tumor detection system is required to detect tumors at its early stage. This paper uses deep learning based Depth wise separable Convolution Neural Network to detect the tumor based on the MRI images.

**Keywords:** Brain Tumor, Brain, Convolution Neural Network, Deep learning.

### INTRODUCTION

Brain tumor is one of the most rigorous diseases in the medical science. An effective and efficient analysis is always a key concern for the radiologist in the premature phase of tumor growth. Histological grading, based on a stereotactic biopsy test, is the gold standard and the convention for detecting the grade of a brain tumor. The biopsy procedure requires the neurosurgeon to drill a small hole into the skull from which the tissue is collected. There are many risk factors involving the biopsy test, including bleeding from the tumor and brain causing infection, seizures, severe migraine, stroke, coma and even death. But the main concern with the stereotactic biopsy is that it is not 100% accurate which may result in a serious diagnostic error followed by a wrong clinical management of the disease.

Tumor biopsy being challenging for brain tumor patients, non-invasive imaging techniques like Magnetic Resonance Imaging (MRI) have been extensively employed in diagnosing brain tumors. Therefore, development of systems for the



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