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BRAIN TUMOR DETECTION

A PROJECT REPORT

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BONAFIDE CERTIFICATE

Certified that this project report **"BRAIN TUMOR DETECTION"** is the bonafide work of **"JOTHIKA MANGAI B(927621BAD018),LIBERNA ASUWATHA A(927621BAD027),SUPRIYA G(927621BAD055)"** who carried out the project work during the academic year 2023-24 under my supervision. Certified further, that to the best of my knowledge the work reportedherein does not form part of any other project or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

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ABSTRACT

Detecting brain tumors through machine learning involves the abstraction of complex neural patterns and characteristics inherent in medical imaging data. This process entails the extraction of meaningful features from magnetic resonance imaging (MRI) or computed tomography (CT) scans, such as shape irregularities, texture variations, and spatial relationships within the brain.Through the utilization of machine learning algorithms like convolutional neural networks (CNNs) or support vector machines (SVMs), these extracted features are then analyzed and classified to distinguish between normal brain tissue and tumor regions. The abstraction process involves training the algorithm on a dataset comprising labeled images, allowing it to learn the intricate patterns associated with different types and stages of brain tumors.As the algorithm iteratively refines its understanding of these patterns through training, it develops the capability to accurately detect and classify tumors in unseen medical images. This abstraction enables clinicians to leverage the power of machine learning for early and precise diagnosis, facilitating timely interventions and improving patient outcomes in the management of brain tumors. During the training phase, the algorithms learn to generalize from the provided examples, gradually improving their ability to accurately classify unseen data. This iterative learning process is crucial for developing robust models capable of accurately detecting brain tumors across diverse patient populations and imaging conditions.Once trained, the machine learning model can be deployed to analyze new brain scans in real-time, swiftly detecting suspicious regions that may indicate the presence of a tumor. By automating this detection process, clinicians can expedite diagnosis, facilitate early intervention, and enhance patient outcomes.Overall, the abstraction involved in brain tumor detection using machine learning represents a fusion of medical expertise, computational algorithms, and data-driven insights, paving the way for more efficient and accurate diagnosis in clinical settings.

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KEYWORDS : MRI (Magnetic Resonance Imaging), Dataset ,Data augmentation, Evaluation metrices.

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LIST OF ABBREVIATIONS

AI	Artificial Intelligence
CNN	Convolutional Neural Network
MRI	Magnetic Resonance Imaging
SVM	Support Vector Machine
RFM	Radio misc Future Mining
SRC	Sparse Representation-based Classification
OPENCV	Open Source Computer Vision
VGG	Visual Geometry Group
DTI	Diffusion Tensor Imaging
ML	Machine Learning
ADC	Apparent Diffusion Coefficient