**Brain Stroke Prediction Using Machine Learning**

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**Abstract**

A stroke is a cerebrovascular incident that occurs when the blood supply to part of the brain is interrupted or reduced, preventing brain tissue from getting enough oxygen and nutrients causing brain cells to die within minutes. According to the World Health Organization, strokes are the second leading cause of death globally, just behind ischemic heart disease. Strokes account for approximately 11% of all deaths worldwide, underscoring the critical importance of awareness, prevention, and timely treatment of this medical condition. They not only contribute significantly to mortality rates but also lead to severe disability. Our goal is to determine if the patient is at risk of having a stroke using the CT/MRI scan of a patient’s brain. This information is crucial because it allows for early intervention, which can significantly improve outcomes. Early detection can lead to prompt treatment, potentially preventing the stroke or minimizing its severity, thereby reducing the risk of long-term disability and improving the patient's quality of life. Our solution involves training an AI model using Convolutional Neural Networks (CNN) to predict the risk of brain stroke in patients from their CT/MRI scans. CNNs are particularly effective in image analysis due to their ability to automatically learn and detect patterns and features within visual data. By leveraging a large dataset of brain scans, our model will be trained to recognize the subtle indicators of stroke risk. This approach aims to provide accurate and early predictions, enabling timely medical interventions that can prevent strokes or minimize their severity, ultimately reducing healthcare costs and improving long-term health outcomes for patients.