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Chatbot based Brain Tumor Detection using CNN

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Abstract: *Brain tumors are one of the most serious neurological disorders, where early and accurate diagnosis plays a vital role in improving patient survival rates. Traditional brain tumor detection methods rely heavily on manual analysis of MRI scans by radiologists, which is time-consuming and prone to human error, especially in early stages. To address these challenges, this research proposes a chatbot-based brain tumor detection system using Convolutional Neural Networks (CNN). The proposed system automatically analyzes MRI brain images and classifies them into four categories: glioma, meningioma, pituitary tumor, and no tumor. Image preprocessing techniques such as resizing and normalization are applied to improve model performance and consistency. The trained CNN model provides fast and reliable predictions with confidence scores. In addition, an AI-powered chatbot is integrated to explain results in simple language and guide users regarding further medical steps. The system also assists users by suggesting nearby hospitals for consultation. Experimental results demonstrate that the proposed approach improves diagnostic accuracy and reduces dependency on manual interpretation. This system acts as an effective decision-support tool for early brain tumor detection and patient assistance.*

Keywords: Brain Tumor Detection, Convolutional Neural Network (CNN), MRI Image Analysis, Medical Image Classification, AI Chatbot Assistance, Healthcare Decision Support Systems

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