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Paper Title:	Revolutionizing Mild Traumatic Brain Injury Detection: An AI-Based Automated Framework
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Abstract

The diagnosis of brain scans for patients with mild traumatic brain injury typically requires the expertise of a neurosurgeon. However, the small size of the lesions poses a significant challenge, increasing the risk of missing critical areas. To address this issue, a computer-aided system has been developed to assist in the preliminary diagnosis. This study proposes an automated processing framework for mild traumatic brain injury detection. Two processing frameworks were investigated: lesion analysis and brain analysis. The lesion analysis involved the lesion segmentation and binary feature extraction, while the brain analysis employed the whole brain tissue and used more complex features. The same feature selection and classification methods were applied to both approaches. The results show that both frameworks achieve comparable classification performance, with accuracy rates of 96.25% in the training and 90% in the test datasets. Each approach has its own strengths: the lesion analysis offers the advantage of requiring simpler feature sets with lesion segmentation, while the brain analysis leverages the entire brain tissue and utilizes more complex features for a comprehensive assessment.
