**Exploring Explainable Artificial Intelligence Techniques for Enhanced Upper Motor Functions Rehabilitation Using the Wolf Motor Function Test**

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# Abstract

Rehabilitation therapies play a pivotal role in restoring upper motor functions among individuals with neurological impairments, and the Wolf Motor Function Test (WMFT) is a widely accepted assessment tool for evaluating motor functions in individuals with neurological disorders, such as stroke. This research showcases the potential of XAI techniques in augmenting upper motor functions rehabilitation using the WMFT, and shows the integration of explainability into AI-driven rehabilitation systems not only enhances clinical decision-making but also empowers patients in their recovery journey as it contributes to the advancement of personalized and effective rehabilitation strategies for individuals with neurological impairments with a simple proposed system that integrates real-time sensor data, collected during WMFT exercises, with XAI algorithms to provide personalized and adaptive rehabilitation strategies. The accuracy of the developed model was evaluated using 7-cross validation and yielded an accuracy of 92.80%, and anchors precision between 0.94 and 0.97.

Introduction