TEAM 18

A Machine Learning Approach to Parkinson's Disease Detection Based on Mouse Interaction Pattern

ABSTRACT

A Parkinson's Disease (PD) is a progressive neurodegenerative disorder that primarily affects motor control, leading to tremors, rigidity, and bradykinesia. Early detection plays a crucial role in effective management and treatment planning. Traditional diagnostic techniques often rely on subjective clinical evaluations, which can delay diagnosis in early stages. This project proposes an innovative, task-based approach to aid in the early detection of Parkinson's Disease through the analysis of mouse movement patterns using a custom-built graphical interface. The system, developed using Python and Tkinter, incorporates three distinct motor tests—Follow Line, Draw Square, and Click Targets—each designed to assess different aspects of fine motor skills and coordination. By capturing and analysing metrics such as mean squared error (MSE), reaction time, and movement smoothness, the tool quantifies motor performance in a non-invasive and user-friendly manner. These metrics are then used to generate a risk score, which provides users with a visual risk assessment and personalized food recommendations based on their motor performance.

Signature of The Guide