AI-Powered Parkinson's Disease Detection and Monitoring System Using Machine Learning

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Abstract: *Parkinson's disease is a progressive neurological disorder that primarily affects the motor functions of the human body, leading to symptoms such as tremors, stiffness, slow movement, speech difficulties, and problems with coordination and balance. Early diagnosis and continuous monitoring of Parkinson's disease are extremely important for improving patient care and enhancing the quality of life of affected individuals. However, traditional diagnostic methods mainly depend on clinical observation and neurological examinations performed by doctors, which can sometimes be subjective and may lead to delayed detection of the disease. With the rapid advancement of Artificial Intelligence and Machine Learning technologies, healthcare systems are becoming more intelligent and capable of analyzing complex medical data efficiently. This research proposes an AI-powered Parkinson's Disease Detection and Monitoring System developed using Python and machine learning algorithms. The proposed system analyzes patient data such as speech patterns, hand tremors, and movement irregularities to identify early signs of Parkinson's disease. By applying advanced machine learning models, the system can assist medical professionals in detecting the disease with improved accuracy and monitoring the progression of symptoms over time. The system aims to provide a data-driven healthcare support tool that enhances early diagnosis, supports medical decision-making, and enables effective patient monitoring. The integration of artificial intelligence into healthcare applications can significantly improve the efficiency of disease detection and help doctors provide timely treatment to patients.*

Keywords: Parkinson's Disease, Machine Learning, Artificial Intelligence, Healthcare Monitoring, Python