Proposal for Early Detection of Parkinson's Disease Using Voice Measurements

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Introduction

Parkinson's disease (PD) is a progressive neurodegenerative disorder characterized by motor symptoms that significantly impact the quality of life.

Early detection of PD is critical for effective intervention and management, which can slow disease progression and improve patient outcomes.

Recent advancements in machine learning and voice analysis have opened new avenues for non-invasive detection methods.

This project proposes the development of a reliable tool to predict the presence of Parkinson's disease using voice recordings, leveraging machine learning techniques to analyze voice features.

Problem Statement

The early stages of Parkinson's disease are often subtle and difficult to identify through traditional clinical assessments.

As a result, many patients do not receive timely diagnosis and intervention, leading to a decline in their quality of life.

The challenge lies in developing an efficient and accessible method for early detection that can be utilized in both clinical and non-clinical settings.
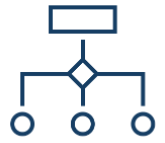
This project aims to address this challenge by utilizing voice recordings as a diagnostic tool, capitalizing on the correlation between voice features and the presence of Parkinson's disease.

1. Develop a machine learning model, specifically a Support Vector Machine (SVM), that accurately predicts the presence of Parkinson's disease based on voice recordings.

2. Preprocess and analyze the Parkinson's Data Set from Kaggle, focusing on key voice features that differentiate individuals with Parkinson's disease from healthy individuals.

3. Create a user-friendly graphical user interface (GUI) that allows users to input voice recording features and receive predictions regarding the likelihood of having Parkinson's disease.

4. Evaluate the model's performance and reliability through metrics such as accuracy, precision, recall, and F1 score.

Related Work

https://ieeexplore.ieee.org/document/8615607