Parkinson's Application User- Manual

Version: 1.0

Last Updated: June 2025

Developed by: Sai Siddharth B S, Sourabh Mekkalike, Sripathi Baliga J, Vidya R

📘 Introduction

This application is designed to help detect early signs of **Parkinson's Disease** through three non-invasive tests: **Speech Analysis**, **Handwriting Analysis**, and **Gait Analysis**. The app uses ML models trained on medical data to assist in early screening and monitoring.

🛠️ System Requirements

- **Operating System:** Windows 10 or higher
- **RAM:** 8 GB minimum
- **Storage:** 1 GB free
- **Python:** Python 3.9 – 3.11 (only needed for script execution)
- **Optional Hardware:** Microphone, Writing pad, Webcam

📦 Installation Instructions

1. Visit the official website or shared link.
2. Download the Parkinson_Detection.exe file.
3. Double-click to run (No installation required).
4. If prompted by Windows Defender, click **"More Info" → "Run**
5. You're ready to begin!

🚀 How to Use the App

Main Menu Navigation

Choose from:

- 🗣️ **Speech Analysis**
- ✍️ **Handwriting Analysis**
- 🚶 **Gait Analysis**
- 📄 **Final Report Generator**

🗣️ Speech Analysis

- Click **"Browse"** to select a .wav file of the patient reading a given paragraph.
- A waveform animation shows during analysis.
- After processing, results are shown as:
  - 🟢 **Healthy**
  - 🔴 **Parkinson Detected**

💡 *Tip: Use a quiet room and a good-quality microphone for best results.*

✍️ Handwriting Analysis

- Choose 4 spiral or pattern-drawing images using the provided radio buttons.
- Click **"Process"** to analyze them.
- Each image is individually evaluated and returns:
  - 🟢 **Healthy**
  - 🔴 **Parkinson Symptoms**

💡 *Tip: Scan clear, high-contrast images or use a drawing tablet if available.*

🚶 Gait Analysis

- Click **"Browse Gait Video"** and select a .mp4 or .avi file.
- The system analyzes steps, cadence, stride length, and posture angle.
- Output is displayed and used in the final report.

💡 *Tip: Use a well-lit video of the patient walking toward or away from the camera.*

📄 Final Report

- Click **"Generate Report"** after completing the tests.
- Enter **Patient Name** and **ID**.

- The app generates a **customized diagnosis report** summarizing:
  - Speech results
  - Handwriting results
  - Gait analysis
  - Final assessment

📋 Sample Output

=== PARKINSON'S DETECTION REPORT ===

Patient Name: John Doe

Patient ID: 1234

Date: 2025-05-23

HANDWRITING: 3/4 drawings indicate Parkinson

SPEECH: Parkinson Detected

GAIT: Abnormal cadence and stride length

FINAL ASSESSMENT:

🔴 STRONG INDICATORS OF PARKINSON'S DISEASE DETECTED

🧭 Guidelines for Best Results

Test Type	Guideline
Speech	Use a quiet room, speak clearly into mic
Handwriting	Use scanned or tablet input with visible lines
Gait	Record video from the side/front, with good light

🔐 Privacy and Security

- All data is processed **locally** on your system
- No data is uploaded anywhere
- **100% offline** and private

🛠️ Troubleshooting

Problem	Solution
App doesn't open	Right-click > Run as Administrator
.wav file not accepted	Ensure it's in .wav format only
Gait video too short	Use at least a **10-second** walking video

🔮 Future Features

- Patient history tracking
- Medication response logging
- Online doctor dashboard integration
- Progress graphing
- Mobile app release