

Low Level Design (LLD)

Parkinson's Disease Prediction

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## Abstract

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## Abstract

Parkinson's disease(PD) is a central nervous system degenerative disease that affects the quality of life of millions of seniors around the world. Because of the variability of the condition, symptoms of Parkinson's disease might progress differently from person to person. Patients with Parkinson's disease may experience tremorous , which occur mostly during rest. Tremors in the hands. Limb rigidity, and gait and balance issues are all possibilities. Generally, two types of symptoms of PD can be distinguished: movement-related (i.e.. Motor) and unrelated to movement (non motor). Patients with non-motor symptoms are actually more affected than those with motor symptoms. Depression, sleep behaviour abnormalities, loss of smell. And cognitive impairment are examples of non-motor symptoms. It should be mentioned that early discovery of Parkinson's disease allows for faster treatment and a significant reduction in symptoms. As a result detecting PD at an early stage is critical for slowing its progression and, when available, may provide patients with the opportunity to receive disease-modifying therapy.

# 1.Introduction

## Why this Low-Level Design Documentation?

The purpose of this documentation is detailed description of restaurant rating prediction system which will explain the purpose and the feature of the system, the interfaces of the system, what the system will do, the constraints under which it must operate and how the system will perform under different parameters. This document is intended for both the stack holders and developers of the system and will be proposed for the higher management for its approval.

This project can be delivered in three phases

Phase 1: Building Machine learning model depending on the requirements.

Phase 2: Integration of UI and database to all the functionalities.

Phase 3: Deployment of project on cloud.

## SCOPE

This software system will be a web application, this system will be designed to predicts the Parkinson's Disease Prediction based on the user's input in which there are several categories to fill in like the Fo, Fh , Flo, Shimmer, HNR, RPDE, Spread1, D2.

## Constraints

It is a project based on Parkinson's Disease Data.

## Out Of Scope

System will not perform correctly if the data is in good format.

## 2. Technical Specifications

**Data:** Parkinson's Disease

**Finalized:** Yes

# Data Set Overview

195 Rows

24 columns

	name	MDVP:Fo(Hz)	MDVP:Fhi(Hz)	MDVP:Flo(Hz)	MDVP:Jitter(%)	MDVP:Jitter(Abs)	MDVP:RAP	MDVP:PPQ	Jitter:DDP	MDVP:Shimmer	...	Shimmer:DDA	NI
0	phon_R01_S01_1	119.992	157.302	74.997	0.00784	0.00007	0.00370	0.00554	0.01109	0.04374	...	0.06545	0.022
1	phon_R01_S01_2	122.400	148.650	113.819	0.00968	0.00008	0.00465	0.00696	0.01394	0.06134	...	0.09403	0.019
2	phon_R01_S01_3	116.682	131.111	111.555	0.01050	0.00009	0.00544	0.00781	0.01633	0.05233	...	0.08270	0.013
3	phon_R01_S01_4	116.676	137.871	111.366	0.00997	0.00009	0.00502	0.00698	0.01505	0.05492	...	0.08771	0.013
4	phon_R01_S01_5	116.014	141.781	110.655	0.01284	0.00011	0.00655	0.00908	0.01966	0.06425	...	0.10470	0.017
...	...	...	...	...	...	...	...	...	...	...	...	...	...
190	phon_R01_S50_2	174.188	230.978	94.261	0.00459	0.00003	0.00263	0.00259	0.00790	0.04087	...	0.07008	0.027
191	phon_R01_S50_3	209.516	253.017	89.488	0.00564	0.00003	0.00331	0.00292	0.00994	0.02751	...	0.04812	0.018
192	phon_R01_S50_4	174.688	240.005	74.287	0.01360	0.00008	0.00624	0.00564	0.01873	0.02308	...	0.03804	0.107
193	phon_R01_S50_5	198.764	396.961	74.904	0.00740	0.00004	0.00370	0.00390	0.01109	0.02296	...	0.03794	0.072
194	phon_R01_S50_6	214.289	260.277	77.973	0.00567	0.00003	0.00295	0.00317	0.00885	0.01884	...	0.03078	0.043

195 rows x 24 columns

## Input Schema

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 195 entries, 0 to 194
Data columns (total 23 columns):
#   Column                Non-Null Count  Dtype
---  -
0   MDVP:Fo(Hz)           195 non-null    float64
1   MDVP:Fhi(Hz)          195 non-null    float64
2   MDVP:Flo(Hz)          195 non-null    float64
3   MDVP:Jitter(%)        195 non-null    float64
4   MDVP:Jitter(Abs)      195 non-null    float64
5   MDVP:RAP               195 non-null    float64
6   MDVP:PPQ               195 non-null    float64
7   Jitter:DDP             195 non-null    float64
8   MDVP:Shimmer           195 non-null    float64
9   MDVP:Shimmer(dB)      195 non-null    float64
10  Shimmer:APQ3           195 non-null    float64
11  Shimmer:APQ5           195 non-null    float64
12  MDVP:APQ               195 non-null    float64
13  Shimmer:DDA           195 non-null    float64
14  NHR                    195 non-null    float64
15  HNR                    195 non-null    float64
16  status                 195 non-null    int64
17  RPDE                   195 non-null    float64
18  DFA                    195 non-null    float64
19  spread1                195 non-null    float64
20  spread2                195 non-null    float64
21  D2                     195 non-null    float64
22  PPE                    195 non-null    float64
dtypes: float64(22), int64(1)
memory usage: 35.2 KB
```

## Predicting

- The system displays the Parkinson's according to the User's input.
- The system prevents the set of inputs required from the user.
- The user gives required information.
- The system should be able to predict the Parkinson's Disease According to the user input given.

## Logging

- ✓ We have chosen File logging.
- ✓ System logs each and every system flow.
- ✓ Each and every user's input information is logged.

## Database

The system stores each and every data given by the user or received on request to the database. We have used Cassandra.

## Deployment

### 1. Heroku



### 3. Technology Stack

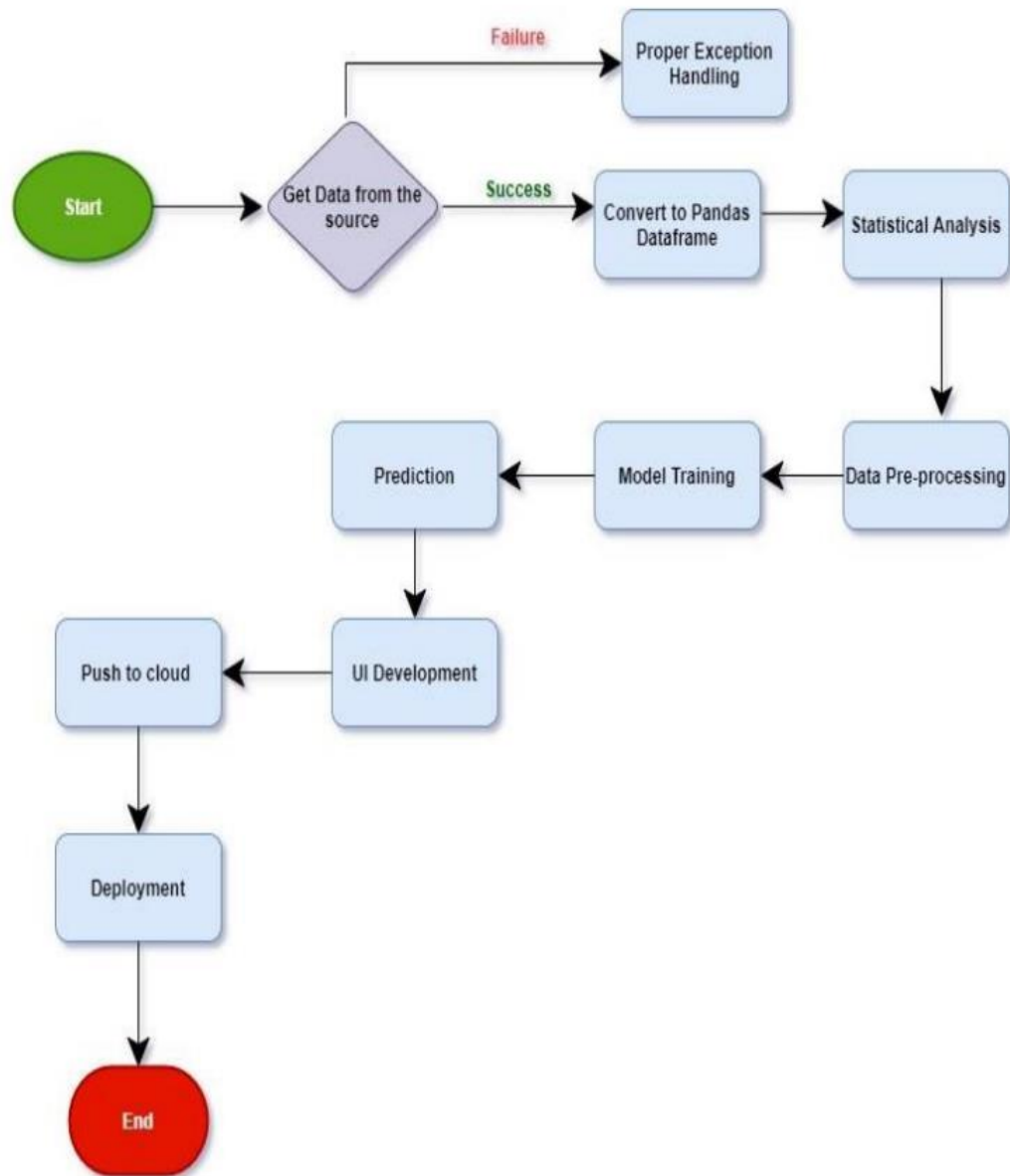
- \* Python
- \* Flask
- \* Html
- \* Python libraries

### 4. Proposed Solution

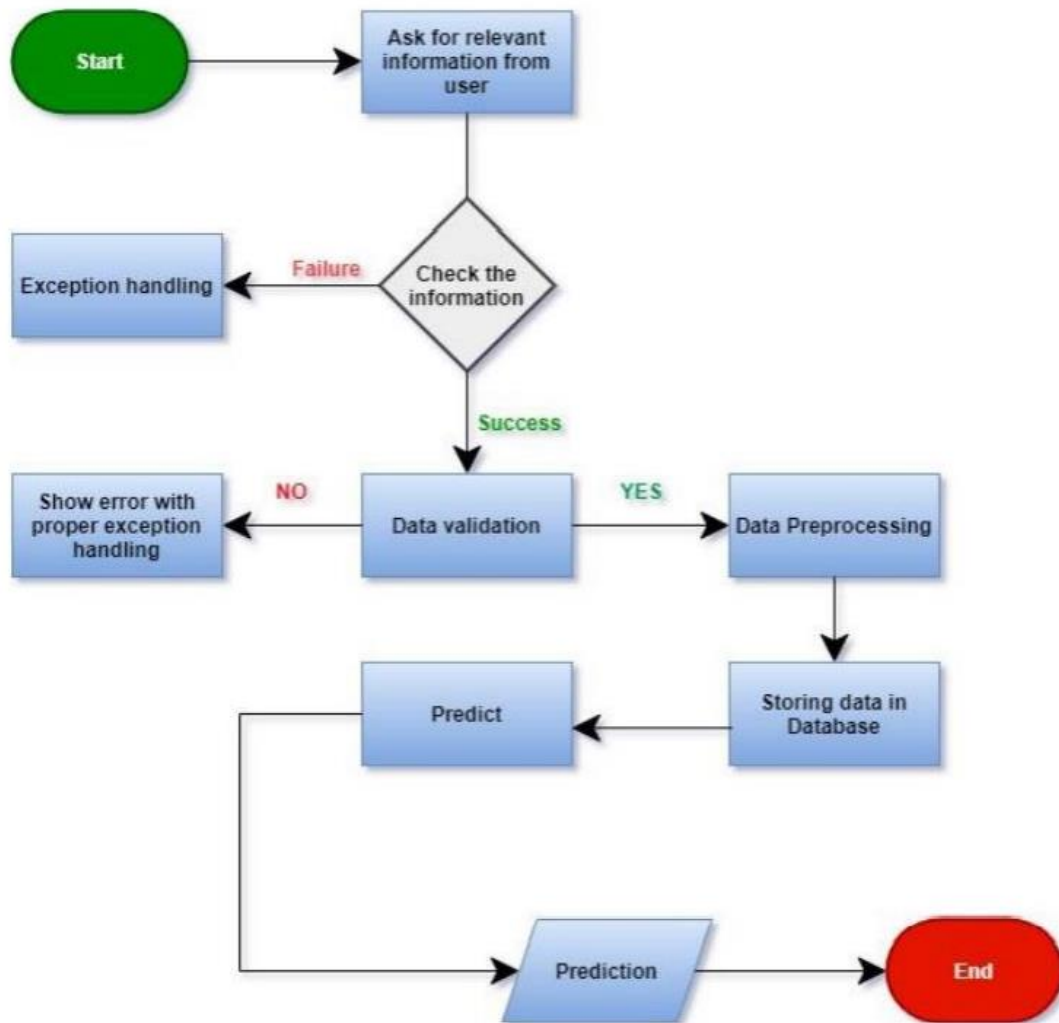
This system requires like feature provided by the system like Fo, Fh, Shimmer, HNR, RPDE, Spread1 etc..



## 5. Model Training / Validation Workflow



## 6. User I/O Workflow



## 7.Test Cases.

Test Case Description	Pre-Requisite	Expected Result
Verify whether the Application URL is accessible to the user	Application URL should be defined	Application URL should be accessible to the user
Verify whether the Application loads completely for the user when the URL is accessed	1. Application URL is accessible 2. Application is deployed	The Application should load completely for the user when the URL is accessed
Verify whether user is able to edit all input fields	1. Application is accessible 2. User is logged in to the application	User should be able to edit all input fields
Verify whether user gets Submit button to submit the inputs	1. Application is accessible 2. User is logged in to the application	User should get Submit button to submit the inputs
Verify whether user is presented with recommended results on clicking submit	1. Application is accessible 2. User is logged in to the application	User should be presented with recommended results on clicking submit
Verify whether the recommended results are in accordance to the selections user made	1. Application is accessible 2. User is logged in to the application	The recommended results should be in accordance to the selections user made