High Level Design (HLD)

High Level Design (HLD)

FLIGHT FARE PREDICTION

Revision Number – 1.0

Last Date of Revision – 13-03-2023

**SUMAY CHATTERJEE**

1

High-Low Level Designing (LLD)(HLD)

2

High Level Design (HLD)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Contents** | | | | | | | | | | | | | | | | | | | | | |  |  |  |  |
| [**Abstract**](https://docs.google.com/document/d/1ZLlZEVdMuxYl3o0PziQjZcUbNmAcz-PR/edit#heading=h.gjdgxs) | | | | | |  | | | | | | | | | | | | | | | | [4](https://docs.google.com/document/d/1ZLlZEVdMuxYl3o0PziQjZcUbNmAcz-PR/edit#heading=h.gjdgxs) | | | |
|  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| [**INTRODUCTION**](https://docs.google.com/document/d/1ZLlZEVdMuxYl3o0PziQjZcUbNmAcz-PR/edit#heading=h.30j0zll) | | | | | | | | | |  | | | | | | | | | | | | [5](https://docs.google.com/document/d/1ZLlZEVdMuxYl3o0PziQjZcUbNmAcz-PR/edit#heading=h.30j0zll) | | | |
|  |  |  |  | |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | [**Why this HLD documentation?**](https://docs.google.com/document/d/1ZLlZEVdMuxYl3o0PziQjZcUbNmAcz-PR/edit#heading=h.1fob9te) | | | | | | | | | | | | | | | | | | | | | [5](https://docs.google.com/document/d/1ZLlZEVdMuxYl3o0PziQjZcUbNmAcz-PR/edit#heading=h.1fob9te) | | |  |
|  |  |  |  | |  | |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |
| [**1 Description**](https://docs.google.com/document/d/1ZLlZEVdMuxYl3o0PziQjZcUbNmAcz-PR/edit#heading=h.2et92p0) | | | | | | | |  | | | | | | | | | | | | | | [5](https://docs.google.com/document/d/1ZLlZEVdMuxYl3o0PziQjZcUbNmAcz-PR/edit#heading=h.2et92p0) | | | |
|  |  | |  |  |  | |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | [**1.1**](https://docs.google.com/document/d/1ZLlZEVdMuxYl3o0PziQjZcUbNmAcz-PR/edit#heading=h.tyjcwt) | |  |  | [**Problem Perspective**](https://docs.google.com/document/d/1ZLlZEVdMuxYl3o0PziQjZcUbNmAcz-PR/edit#heading=h.tyjcwt) | | | | | | | | | | | | | | | | | [5](https://docs.google.com/document/d/1ZLlZEVdMuxYl3o0PziQjZcUbNmAcz-PR/edit#heading=h.tyjcwt) | | |  |
|  |  | |  | |  | |  | |  | |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |
|  | [**1.2 Problem Statement**](https://docs.google.com/document/d/1ZLlZEVdMuxYl3o0PziQjZcUbNmAcz-PR/edit#heading=h.3dy6vkm) | | | | | | | | | | | | | | |  | | | | | | [5](https://docs.google.com/document/d/1ZLlZEVdMuxYl3o0PziQjZcUbNmAcz-PR/edit#heading=h.3dy6vkm) | | |  |
|  |  | | | | | |  | |  | |  |  |  |  |  |  |  | |  |  |  |  |  | |  |
|  | [**1.3 Proposed Solution**](https://docs.google.com/document/d/1ZLlZEVdMuxYl3o0PziQjZcUbNmAcz-PR/edit#heading=h.1t3h5sf) | | | | | | | | | | | | | | |  | | | | | | [5](https://docs.google.com/document/d/1ZLlZEVdMuxYl3o0PziQjZcUbNmAcz-PR/edit#heading=h.1t3h5sf) | | |  |
|  |  | | | | | |  | |  | |  |  |  |  |  |  |  | |  |  |  |  |  | |  |
|  | [**1.4 Solution Improvements**](https://docs.google.com/document/d/1ZLlZEVdMuxYl3o0PziQjZcUbNmAcz-PR/edit#heading=h.4d34og8) | | | | | | | | | | | | | | | | | | | | | [5](https://docs.google.com/document/d/1ZLlZEVdMuxYl3o0PziQjZcUbNmAcz-PR/edit#heading=h.4d34og8) | | |  |
|  |  | | | | | |  | |  | |  |  |  |  |  |  |  | |  |  |  |  |  | |  |
|  | [**1.5 Technical Requirements**](https://docs.google.com/document/d/1ZLlZEVdMuxYl3o0PziQjZcUbNmAcz-PR/edit#heading=h.2s8eyo1) | | | | | | | | | | | | | | | | | | |  | |  | [6](https://docs.google.com/document/d/1ZLlZEVdMuxYl3o0PziQjZcUbNmAcz-PR/edit#heading=h.2s8eyo1) | |  |
|  | [**1.6 Data Requirements**](https://docs.google.com/document/d/1ZLlZEVdMuxYl3o0PziQjZcUbNmAcz-PR/edit#heading=h.17dp8vu) | | | | | | | | | | | | | | |  | | | | | | [6](https://docs.google.com/document/d/1ZLlZEVdMuxYl3o0PziQjZcUbNmAcz-PR/edit#heading=h.17dp8vu) | | |  |
|  |  | | | | | |  | |  | |  |  |  |  |  |  |  | | | |  |  |  | |  |
|  | [**1.7 Tools Used**](https://docs.google.com/document/d/1ZLlZEVdMuxYl3o0PziQjZcUbNmAcz-PR/edit#heading=h.3rdcrjn) | | | | | | | | | |  | | | | |  | | | | | | [7](https://docs.google.com/document/d/1ZLlZEVdMuxYl3o0PziQjZcUbNmAcz-PR/edit#heading=h.3rdcrjn) | | | |
|  |  | |  |  | | |  | |  | |  |  |  |  |  | |  | | | |  |  |  |  | |
|  | [**1.8**](https://docs.google.com/document/d/1ZLlZEVdMuxYl3o0PziQjZcUbNmAcz-PR/edit#heading=h.26in1rg) | |  | [**Constraints**](https://docs.google.com/document/d/1ZLlZEVdMuxYl3o0PziQjZcUbNmAcz-PR/edit#heading=h.26in1rg) | | | | | | | |  | | | | | | | | | | [7](https://docs.google.com/document/d/1ZLlZEVdMuxYl3o0PziQjZcUbNmAcz-PR/edit#heading=h.26in1rg) | | | |
|  |  | | | | | |  | |  | | |  |  |  |  | |  | | | |  |  |  | | |
|  | [**1.9 Assumptions**](https://docs.google.com/document/d/1ZLlZEVdMuxYl3o0PziQjZcUbNmAcz-PR/edit#heading=h.lnxbz9) | | | | | | | | | | | | | | | | | | | | | [7](https://docs.google.com/document/d/1ZLlZEVdMuxYl3o0PziQjZcUbNmAcz-PR/edit#heading=h.lnxbz9) | | | |
|  | |  | | | | |  | |  | | |  |  |  |  | |  | | | |  |  |  | | |
| [**2 Design Flow**](https://docs.google.com/document/d/1ZLlZEVdMuxYl3o0PziQjZcUbNmAcz-PR/edit#heading=h.35nkun2) | | | | | | | | |  | | | | | | | | | | | | | [7](https://docs.google.com/document/d/1ZLlZEVdMuxYl3o0PziQjZcUbNmAcz-PR/edit#heading=h.35nkun2) | | | |
|  |  | | | | | |  | |  | | |  |  | |  | |  | | | |  |  | |  |  |
|  | [**2.1 Modelling Process**](https://docs.google.com/document/d/1ZLlZEVdMuxYl3o0PziQjZcUbNmAcz-PR/edit#heading=h.1ksv4uv) | | | | | | | | | | | | | | | | | | | | | [8](https://docs.google.com/document/d/1ZLlZEVdMuxYl3o0PziQjZcUbNmAcz-PR/edit#heading=h.1ksv4uv) | | |  |
|  |  | | | | | |  | | | | |  |  | |  | |  | | | |  |  |  | |  |
|  | [**2.2 Deployment Process**](https://docs.google.com/document/d/1ZLlZEVdMuxYl3o0PziQjZcUbNmAcz-PR/edit#heading=h.44sinio) | | | | | | | | | | | | | | | | | | | | | [8](https://docs.google.com/document/d/1ZLlZEVdMuxYl3o0PziQjZcUbNmAcz-PR/edit#heading=h.44sinio) | | |  |
|  | |  | |  | | |  | | | | |  |  | | | |  | | | |  |  |  | |  |
| **2.3** | | | | **Logging** | | | | | | | | | | | | | | | | | | 8 | | |  |
| **2.2** | | | | **Error Handling** | | | | | | | | | | | | | | | | | | 8 | | |  |
| [**3 Performance Evaluation**](https://docs.google.com/document/d/1ZLlZEVdMuxYl3o0PziQjZcUbNmAcz-PR/edit#heading=h.4i7ojhp) | | | | | | | | | | | | | | | | |  | | | | | [9](https://docs.google.com/document/d/1ZLlZEVdMuxYl3o0PziQjZcUbNmAcz-PR/edit#heading=h.4i7ojhp) | | |  |
|  | | |  |  | | |  | | | | |  |  | | | |  | | | |  |  |  | |  |
|  | [**3.1**](https://docs.google.com/document/d/1ZLlZEVdMuxYl3o0PziQjZcUbNmAcz-PR/edit#heading=h.2xcytpi) | |  | [**Reusability**](https://docs.google.com/document/d/1ZLlZEVdMuxYl3o0PziQjZcUbNmAcz-PR/edit#heading=h.2xcytpi) | | | | | | | |  | | | | |  | | | | | [9](https://docs.google.com/document/d/1ZLlZEVdMuxYl3o0PziQjZcUbNmAcz-PR/edit#heading=h.2xcytpi) | | | |
|  |  | |  |  | | |  | | | | |  |  | | | |  | | | |  |  |  | |  |
|  | [**3.2**](https://docs.google.com/document/d/1ZLlZEVdMuxYl3o0PziQjZcUbNmAcz-PR/edit#heading=h.1ci93xb) | |  | [**Application Compatibility**](https://docs.google.com/document/d/1ZLlZEVdMuxYl3o0PziQjZcUbNmAcz-PR/edit#heading=h.1ci93xb) | | | | | | | | | | | | | | | | | | [9](https://docs.google.com/document/d/1ZLlZEVdMuxYl3o0PziQjZcUbNmAcz-PR/edit#heading=h.1ci93xb) | | |  |
|  | [**3.3**](https://docs.google.com/document/d/1ZLlZEVdMuxYl3o0PziQjZcUbNmAcz-PR/edit#heading=h.3whwml4) | |  | [**Resource Utilization**](https://docs.google.com/document/d/1ZLlZEVdMuxYl3o0PziQjZcUbNmAcz-PR/edit#heading=h.3whwml4) | | | | | | | | | | | | |  | | | |  |  | [9](https://docs.google.com/document/d/1ZLlZEVdMuxYl3o0PziQjZcUbNmAcz-PR/edit#heading=h.3whwml4) | |  |
|  |  | | | | | |  | | | | | |  | | | |  | | | | |  |  | |  |
|  | [**3.2 Deployment**](https://docs.google.com/document/d/1ZLlZEVdMuxYl3o0PziQjZcUbNmAcz-PR/edit#heading=h.2bn6wsx) | | | | | | | | | | | | | | | |  | | | | | [9](https://docs.google.com/document/d/1ZLlZEVdMuxYl3o0PziQjZcUbNmAcz-PR/edit#heading=h.2bn6wsx) | | | |
|  |  | | | | | |  | | | | | |  | | | | | | | | |  |  | | |
| [**Conclusion**](https://docs.google.com/document/d/1ZLlZEVdMuxYl3o0PziQjZcUbNmAcz-PR/edit#heading=h.qsh70q) | | | | | | | | | | | | | | | | | | | | | | [9](https://docs.google.com/document/d/1ZLlZEVdMuxYl3o0PziQjZcUbNmAcz-PR/edit#heading=h.qsh70q) | | | |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

3

High Level Design (HLD)

**Abstract**

The recent international things had a large impact on the aviation sector because of several reasons. This impact has 2 class folks, the primary is business perspective and therefore the second is that the customers perspective. As safety is that the major reason for such impact on the aviation sector, the governments round the world amended totally different rules to their various airlines firms. These restrictions had created the supply of the flights and their attendant capability less. Taking of these factors in thought the value of the flight tickets has accrued and vary from one place to the opposite. Booking a flight price tag has split into 2, one is that the on-line and therefore the alternative is that the offline bookings. each these have their various criteria for value of the price tag, one such example is that the server load and therefore the range of booking requests. during this machine learning implementation, we are going to see numerous factors that impact worth of the flight ticket price and predict the acceptable price of the ticket.

4

High Level Design (HLD)

**1 Introduction**

**1.1 Why this High-Level Design Document?**

The main purpose of this HLD documentation is to feature the required details of the project and supply the outline of the machine learning model and also the written code. This additionally provides the careful description on however the complete project has been designed end-to-end.

**1.2 Description**

**Problem Perspective**

The flight fare prediction may be a machine learning model that helps INDIA to predict the price of the flight price tag and helps the users to understand the price of their journey.

**1.3 Problem Statement**

The most goal of the project is to form a programme that predicts the price of the flight price tag by taking bound input from the user like date of journey, location and destination etc.

**1.4. Project Solution**

Project requires the desired input of user from the created interface and method all the provided information to satisfy the wants of the machine learning model and at last show the expected output.

5

High Level Design (HLD)

**1.5 Answer enhancements**

we will even predict the price of price tag considering whether or not is it a weekday, season or alternative social reasons. however, considering from the angle of business, if we have a tendency to method such information and predict the price of the discounted price tag it'll bring some loss to the airlines company. therefore, this technique isn't thought-about.

**1.6 Technical needs**

There are not any hardware needs needed for victimization this application, the user should have AN interactive device that has access to the web and should have the fundamental understanding of providing the input. And for the backend half the server should run all the package that's needed for the process and provided information to show the results.

**1.7 Information needs**

The info demand is totally supported the matter statement. and also, the information set is accessible on the Kaggle within the type of standout sheet(.xlsx), because the main theme of the project is to induce the expertise of real time issues, we have a tendency to once more mercantilism {the information into the prophetess data base and commerce it into csv format.

**1.8Tools Used**

* Python 3.7 is employed because the programming language and frame works like numpy, pandas, sklearn and alternative modules for building the model.
* PyCharm is employed as IDE.
* For visualizations seaborn and components of matplotlib are getting used.

6

High Level Design (HLD)

* For information assortment prophetess info is getting used.
* Front end development is completed victimization HTML/CSS.
* Flask is employed for each information and backend readying.
* GitHub is employed for version management.
* NETLIFY is employed for deployment.

**1.9 Constraints**

The flight fare prediction answer should be user friendly, as automatic as attainable and also the user should not be needed to understand any of the operating.

**1.10 Assumptions**

The most objective of the project is to implement the utilization cases as for the new dataset that user provides through the programme. Machine learning model is employed for process the on top of computer file. It's additionally assumed that each one aspects of this project have the flexibility to figure along within the approach as the designer is expecting.



7

High Level Design (HLD)

**2.1 and 2.2 Design Flow and Deployment Process**



|  |  |  |  |
| --- | --- | --- | --- |
|  |  | |  |
|  |  | |  |
|  |  |



**2.3 Logging**

Each step is being logged within the system that runs internally, that shows the date time and therefore the processed that has been performed, work is completed in several layers as information, DEBUG, ERROR, WARNINGS. this provides US the perceive of the logged info.

**2.4 Error Handling**

Once ever a slip is occurred, the reason are logged in its several log file, in order that the developer will rectify the error.

High Level Design (HLD)

**3 Performance analysis**

**3.1 Reusability**

Elements of the code written is accustomed different applications and therefore the rest is changed and be reused.

**3.2 Application Compatibility**

The various parts for this project are exploitation python as associate interface between them. every element can have its own tasks to perform, and it's the work of the python to make sure correct transfer of data.

**3.3 Resource Utilization**

Once any task is performed, it'll doubtless; use all the process power offered till that performs is finished.

**3.4 Deployment**

The model is being deployed on NETLIFY.

**Conclusion**

The flight fare prediction will predict the worth supported the trained knowledge set within the rule. therefore, the user will recognize the approximate value for his or her journey.

9