High Level Design (HLD)

FLIGHT FARE PREDICTION

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Document Version Control:

Version	Date	Author	Description
0.1	24-05-2023	Yashas PS	Introduction Problem Statement
0.2	25-05-2023	Yashas PS	Design Flow
0.3	26-05-2023	Yashas PS	Performance Evaluation

Contents

1. Introduction

1.1. What is 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. Scope

The HLD documentation presents the structure of the system, such as the database architecture, application architecture (layers), application flow (Navigation), and technology architecture. The HLD uses non-technical to mildly-technical terms which should be understandable to the administrators of the system.

2. Description

2.1. Problem Perspective

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

2.2. 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, aboard location and destination etc.

2.3. Purposed Solution

Projected to require 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 output oral communication so and then quantity is that the expected value.

2.4. Solution Improvements

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.

2.5. Technical Requirements

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 the provided information and to show the results.

2.6. Data Requirements

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 ar once more mercantilism {the information into the prophetess data base and commerce it into csv format.

2.7. Tool Used

- Python 3.9 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.
- For information assortment prophetess info is getting used.
- Front end development is completed by Streamlit.
- GitHub is employed for version management.
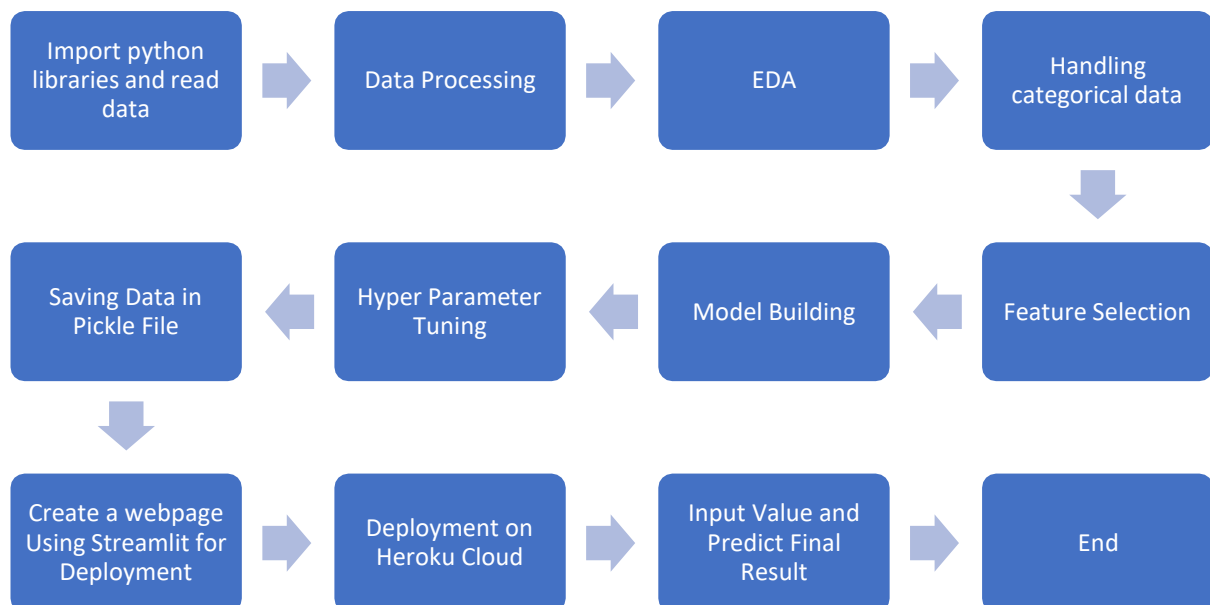- Streamlit is employed for deployment.

2.8. 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.

2.9. 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 the designer is expecting.

3. Design Flow

3.1. Modelling and Deployment Process

Import python libraries and read data	→	Data Processing	→	EDA	→	Handling categorical data

Saving Data in Pickle File	←	Hyper Parameter Tuning	←	Model Building	←	Feature Selection

Create a webpage Using Streamlit for Deployment	→	Deployment on Heroku Cloud	→	Input Value and Predict Final Result	→	End

3.2. 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.

3.3. 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.

4. Performance Evaluation

4.1. Reusability

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

4.2. 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.

4.3. Resource Utilization

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

4.4. Deployment

The model is being deployed on Heroku.

5. 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.