BigMart Sales Prediction

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27/08/2021	1	First Draft - V1.0	Shreyas Kudav

Contents

1. Introduction

1.1 What is a High-Level Design Document?

The idea of a High Level Design Document (HLD) is to provide a complete description or architecture of the application. The HLD involves system architecture, database design, a brief description of systems and relationships among modules.
HLD also includes a detailed information about:

- User interface
- Hardware and software interfaces
- Features and architecture of the application
- Maintenance and security services
- Portability and compatibility

1.2 Scope

HLD documentation presents the structure of the system such as the architecture, application flow and technology used. HLD comprises non-technical to semi-technical details that are understandable to the stakeholders.

2. General Description

2.1 Problem Statement

To build a complete end to end ML solution that should be able to predict the sales of Big Mart using various machine learning techniques and algorithms.

2.2 Proposed Solution

The solution proposed provides an efficient and simple to use application, that can be used without any prior coding knowledge. The application provides means to hold necessary inputs that are required for making accurate sales predictions. It always provides the ability to use multiple pre-trained models and lets users compare and decidem in the end which predictions seem to be reliable. The application will also display historic predictions and other facilities like filtering data based on a certain time period and export capabilities.

2.3 Future Improvements

As a future scope, the solution can be extended by adding a live Model Training feature, that will allow users to upload dataset and generate new models for different algorithms. Other add-ons features like data visualizations after model training and setting up an auto-mail system to send email to respective domain experts for further analysis.

2.4 Technical Requirements

The solution can be a cloud-based or application hosted on an internal server or even be hosted on a local machine. For accessing and using this application below are the minimum requirements:

- Good internet connection
- Web Browser

For model training, the system requirement changes,

- +4 GB RAM preferred
- CPU +i5 preferred
- GPU (optional)
- Operation System; Windows, Linux, Mac
- Jupyter notebook / Visual Studio Code

2.5 Data Requirements

Data requirements completely depend on our problem statement.

- Comma separated values (.CSV)
- Input file field names and its sequence should be followed as per decided.

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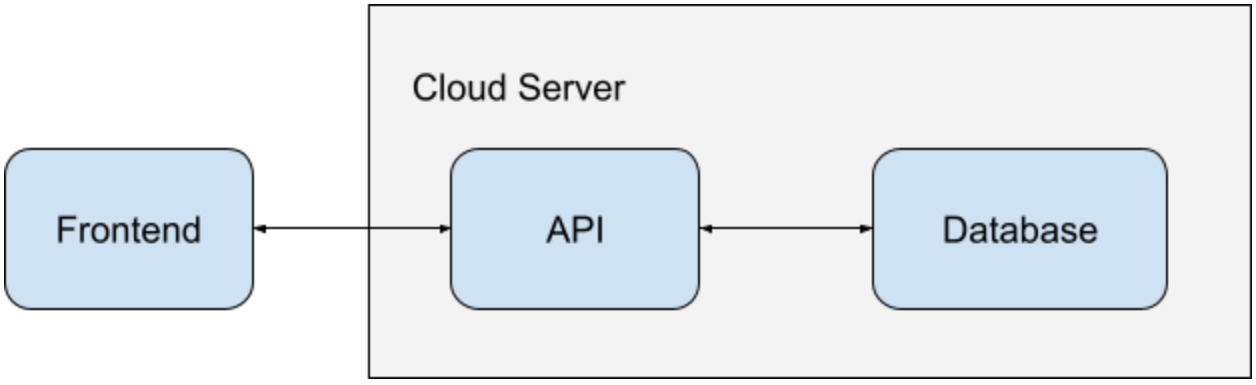
2.7 Tools Used

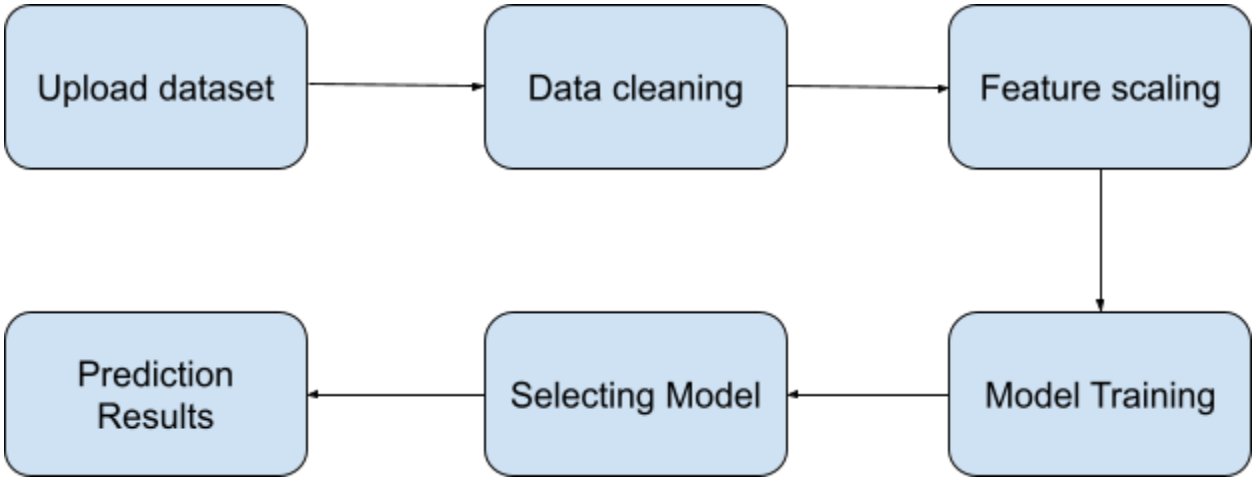
- Python programming and libraries such as NumPy, Pandas, Sklearn, Flask.
- Frontend technology such as HTML, CSS, Bootstrap, Javascript, jQuery.
- IDE used Visual Studio and Jupyter notebook for EDA.
- Plotly library used for data visualisation.
- MySQL/MongoDB used for data related operations.
- Github is used for version control.

3. Design Details

3.1 Overview



3.2 API Process Flow



3.3 Error Handling

At every point, an error is encountered the system will log the error details like timestamp and exactly inside which module the error was thrown. A customer error message will be shown to the end user. The logging can either be done by writing the error message in log text files or saved in the database.

4. Performance

4.1 Reusability

The entire solution will be done in modular fashion and will be API oriented. So in the case of scaling the application, the components are completely reusable.

4.2 Application Compatibility

All the interaction with the application is done through the designed user interface, which the end user can access through any web browser. It is accessible through desktop as well as mobile phone.

4.3 Deployment

5. Conclusion

Sales Prediction Portal will ease the life of end users, by building a flexible process of making sales predictions, along with numerous pre-built machine learning features with a simple but modern look-and-feel user interface.