# E-commerce Customer Review Rating

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# Document Version Control

| Date Issued | S. No. | Description | Author |
|---|---|---|---|
| 14/06/2022 | 1 | Initial HLD | Rahul Goyal |
| 20/06/2022 | 2 | Design Details – V 1.0 | Rahul Goyal |
| 12/07/2022 | 3 | Updated Design Details – V 2.0 | Rahul Goyal |
| 18/08/2022 | 4 | Performance | Rahul Goyal |
| 10/09/2022 | 5 | Performance Evaluation | Rahul Goyal |
| 10/09/2022 | 6 | Conclusion | Rahul Goyal |

## Contents

## Abstract

Most customers do not post a review rating after purchasing a product which is a challenge for any E-commerce platform to understand or predict that the customer liked of disliked the product. This is crucial for the E-commerce based company because they need to keep track of each product of seller, so that none of the products discourage their customers to come shop with them again. This work is centered around predicting customer satisfaction with a product which can be deduced after predicting the user product rating once the user makes the purchase.

# 1 Introduction

## 1.1 Why this High-Level Design Document?

The purpose of this High-Level Design (HLD) Document is to add the necessary detail to the current project description to represent a suitable model for coding. This document is also intended to help detect contradictions prior to coding, and can be used as a reference manual for how the modules interact at a high level.

### The HLD will:

- Present all of the design aspects and define them in detail
- Describe the user interface being implemented
- Describe the hardware and software interfaces
- Describe the performance requirements
- Include design features and the architecture of the project
- List and describe the non-functional attributes like:
    - Security
    - Reliability
    - Maintainability
    - Portability
    - Reusability
    - Application compatibility
    - Resource utilization
    - Serviceability

## 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.

## 1.3 Definitions

| *Term* | *Description* |
|---|---|
| | |
| *Database* | Collection of all the information monitored by this system |
| *IDE* | Integrated Development Environment |

# 2 General Description

## 2.1 *Product Perspective*

The Customer Satisfaction Survey based solution system is a Machine learning-based customer rating detection model which will help us to detect whether the customer liked/disliked the product and basis on that product recommendation can be done.

## 2.2 Problem statement

To create a Machine Learning solution for customer rating using features provided in the Ecom dataset and to implement the following use cases.

- To predict customer satisfaction through rating.

## 2.3 *PROPOSED SOLUTION*

The solution proposed here is a Customer review rating prediction model can be implemented to perform above mention use case(s). In the case above, if model predicts any rating lower than 3 out of 5 it will project the administrator that the user is not satisfied with the product/seller with certain confidence level.

## 2.4 *FURTHER IMPROVEMENTS*

Customer review rating model can be added with more use cases like which particular product getting lower ratings.

## 2.5 *Data Requirements*

Data requirement completely depend on our problem statement.

- We need customer data with rating that is balanced and must have at least 1000 records.
- We need seller data with customer rating that is balanced and must have at least 1000 records.
- We need product data with rating that is balanced and must have at least 1000 records.
- We need payment data that is balanced and must have at least 1000 records.
- We need order review data that is balanced and must have at least 1000 records.

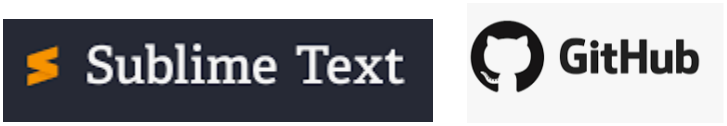
file type best suits :(on your requirement).

a. CSV – Comma Separated Value files
b. xlsx — Excel files

If the data is in any other format like Jason, pdf, word etc convert into above mentioned files. There are number of tools to convert different file format into CSV or excel.

## 2.6 Tools used

Python programming language and frameworks such as NumPy, Pandas, Scikit-learn,are used to build the whole model.


- Sublime text is used as IDE.
- For visualization of the plots, Matplotlib, Seaborn are used.
- Flask is used for deployment of the model.
- Front end development is done using HTML/CSS
- Python Flask is used for backend development.
- GitHub is used as version control system.

## *2.7 Constraints*

The Customer satisfaction-based rating solution system must be user friendly, as automated as possible and users should not be required to know any of the workings.

## *2.8 Assumptions*

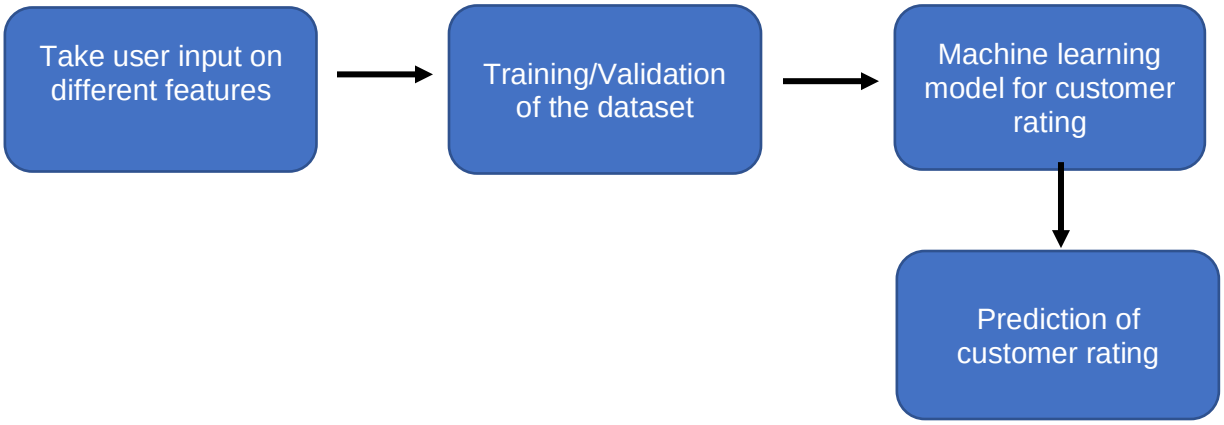
The main objective of the project is to implement the use cases as previously mentioned (2.2 Problem Statement) for new dataset that comes through E-commerce. Machine Learning prediction model is used for detecting the above-mentioned use cases based on the input data. It is also assumed that all aspects of this project have the ability to work together in the way the designer is expecting.

# 3 Design Details

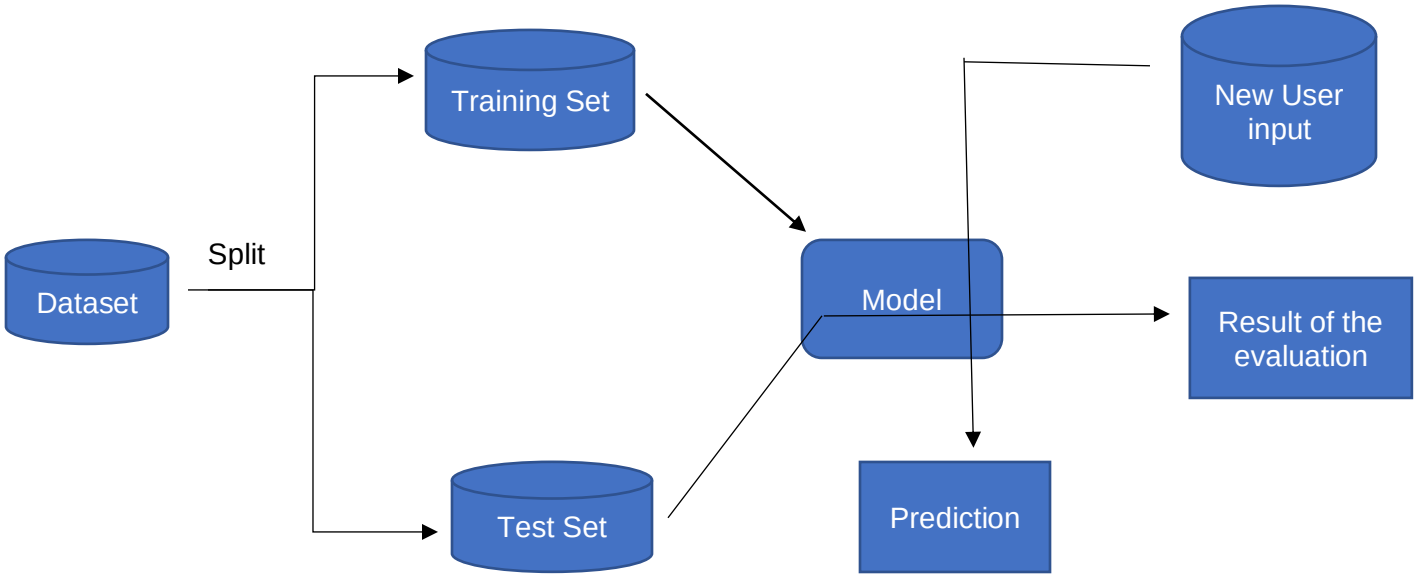
## 3.1 Process Flow

For predicting the customer rating, we will use a machine learning base model.Below is the process flow diagram is as shown below.

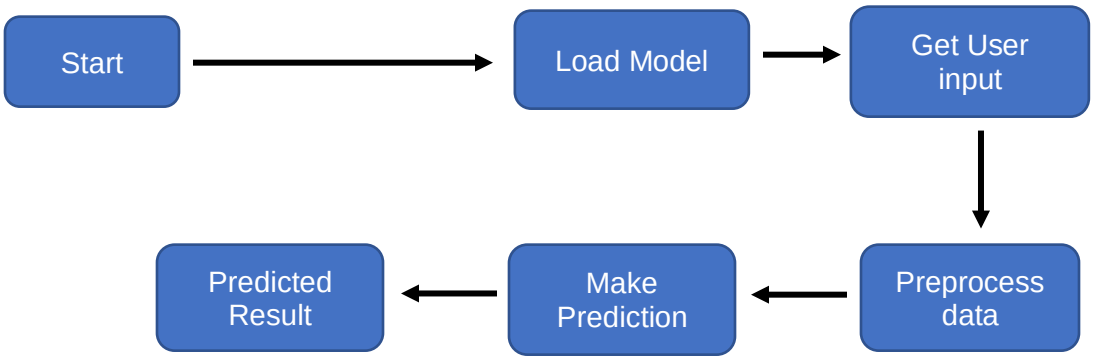
### Proposed methodology




#### 3.1.1 Model Training and Evaluation



### 3.1.2 Deployment Process




## 3.2 Event log

The system should log every event so that the user will know what process is runninginternally.

*Initial Step-By-Step Description:*

1. The System identifies at what step logging required
2. The System should be able to log each and every system flow.
3. Developer can choose logging method. You can choose database logging/ Filelogging as well.
4. System should not hang even after using so many loggings. Logging just becausewe can easily debug issues so logging is mandatory to do.

## 3.3 Error Handling

Should errors be encountered, an explanation will be displayed as to what went wrong? Anerror will be defined as anything that falls outside the normal and intended usage.

# 4 Performance

The Product Rating prediction solution is used for the detection of customer who are likely to discontinue to shop again from their platform. It will predict whether the customer liked or disliked the product. Also, model retraining is very important to improve the performance.

### *4.1 Reusability*

The code written and the components used should have the ability to be reused with noproblems.

### *4.2 Application Compatibility*

The different components for this project will be using Python as an interface between them. Each component will have its own task to perform, and it is the job of the Python to ensure proper transfer of information.

### *4.3 Resource Utilization*

When any task is performed, it will likely use all the processing power available until that function is finished.

## 4.4 Deployment


# 5 Conclusion

The Designed Product Rating model will detect customer review rating level based on various data used to train on Machine Learning algorithm, so we can identify the dissatisfied customer at early stages and can provide some offers to stop them from moving onto new platform.