

Project Report

FOR

Laptop Price Prediction

IN PARTIAL FULFILLMENT OF

MASTER OF COMPUTER APPLICATION

BY

Seat No :- 20055

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SUBMITTED TO

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Date:-

CERTIFICATE

This is to certify that Mr. Swanand Sanjay Dongare has successfully / partially completed his/her project work entitled “**Laptop Price Prediction**” in partial fulfillment of MCA II SEM-III Industry Project for the year 2021-2022. He has worked under our guidance and direction.

Prof. Dr. SUNIL KHILARI

Project Guide

Dr. Chandrani Singh

Director SIOM - MCA

Examiner 1

Examiner 2

Date:

Place:

Acknowledgement

A project report plays vital and important role as the practical counterpart in our curriculum. It gives us preview and chances to see what had to contain within practical world outside. During the project there were professor who helped me whole heartedly. I am thankful to all my faculty who helped me making this project up to mark and success. First I would like to express our indebtedness and heartfelt gratitude to our PRINCIPAL, and my project guide **Dr.SUNIL KHILARI SIR** for the relentless and painstaking efforts taken by them and their suggestions, scholar guidance and constant encouragement at every step of my project. I got to enhance both my practical and theoretical knowledge of system design under the project guides direction. I would like to take this opportunity to thank all my faculties for patience and encouragement during project work.

Place:-Pune

Date:-

Mr. Swanand Dongare

MCA (II)

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Introduction

Artificial Intelligence is an integral part of all major e-commerce companies today. With the evolution of the information industry and extensive research in the field of AI in the past two decades, businesses have started to explore the ways to automate various activities using state of the art Machine Learning algorithms and Deep Neural Networks.

Predicting the price of a product is a tough challenge since very similar products having minute differences such as different brand names, additional specifications, quality, demand of the product, etc. can have very different prices. For example, one of these gaming laptop cost 70,000rs and the other cost Rs 130K. Can you guess which one's which? Price prediction gets even more difficult when there is a huge range of products, which is common with most of the online shopping platforms.

Around 160 Million laptop sold every year so our target is to showcase the approx price for that particular specification of laptop and that is the reason why I have try to implement this to app help to people

The problem statement is that if any user wants to buy a laptop then our application should be compatible to provide a tentative price of laptop according to the user configurations.

Problem Statement

- When we go to buy laptop in any e-commerce site or in a shop we can see the huge price difference so that's why this project will to predict tentative price for that specification
- Predicting the price of the product is tough challenge since very similar product having minute difference such as different brand, different size many more so that's its very difficult to predict the exact price of laptop

Motivation

- Artificial Intelligence is an integral part of all major e-commerce companies today. With the evolution of the information industry and extensive research in the field of AI in the past two decades, businesses have started to explore the ways to automate various activities using state of the art Machine Learning algorithms
- In today's digital world every-field accepting digitization for that everyone needs laptop or desktop so that's why buying laptop according to over specification and in the actual price will be helpful for everyone

Objectives

- The main objective is to predict the actual price, Which is a classic categorical classification problem. It is needed to build a model that can find out the approx price of the product
- Around 160 Million laptop sold every year so our target is to showcase the approx price for that particular specification of laptop and that is the reason why I have try to implement this to app help to people

Project Requirement Specifications

Description -

- In Machine Learning based classification although there are so many algorithms are present but we try some different approach with better accuracy
- It will help to buy laptop in right price .
- Anyone Can easily find out the Tentative price for that Specification

Project scope:

A software requirements specification (SRS) is a document that is created when a detailed description of all aspects of the software to be built must be specified before the project is to commence. It is important to note that a formal SRS is not always written. In fact, there are many instances in which effort expended on a SRS might be better spent in other software engineering activities.

Overview of responsibilities of Developer: To have understanding of the problem statement.

To know what are the hardware and software requirements of proposed system.

To have understanding of proposed system.

To do planning various activities with the help of planner. Designing, programming

Software Resource:

Operating system : Windows 7 and above.

Coding Language :Python

IDE : Jupyter notebook, Visual Studio Code

Hardware Resource:

System : Intel I3 Processor and above.

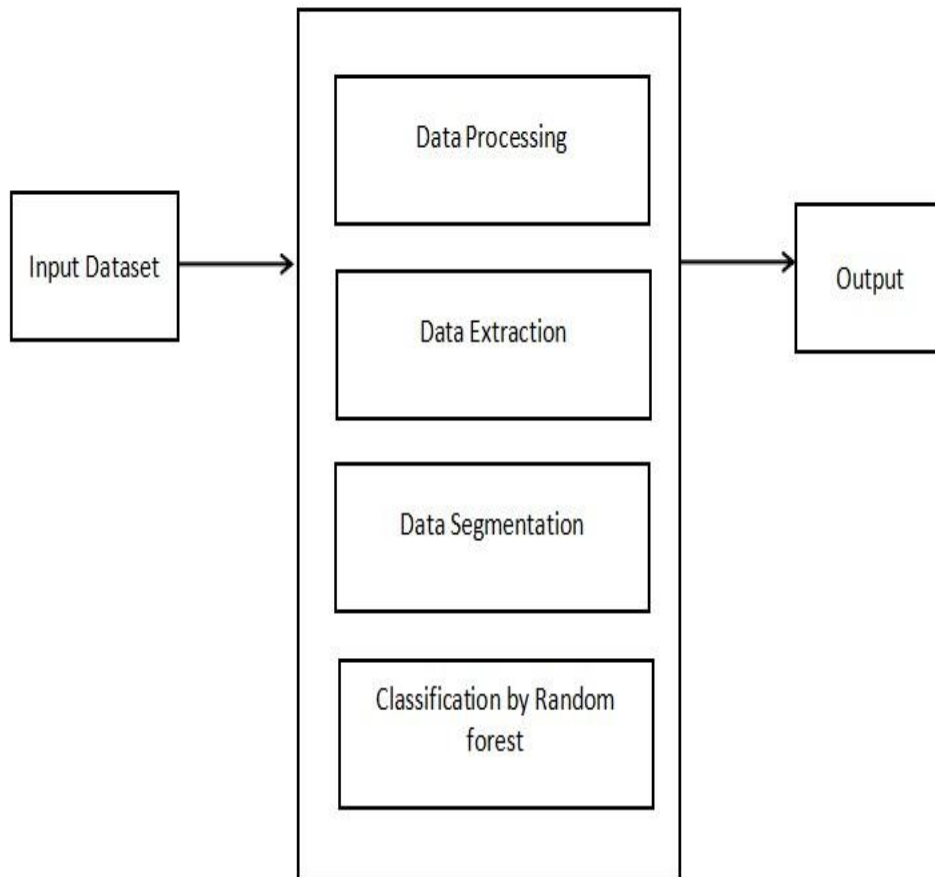
Hard Disk : 200 GB.

Monitor : 15 VGA Color.

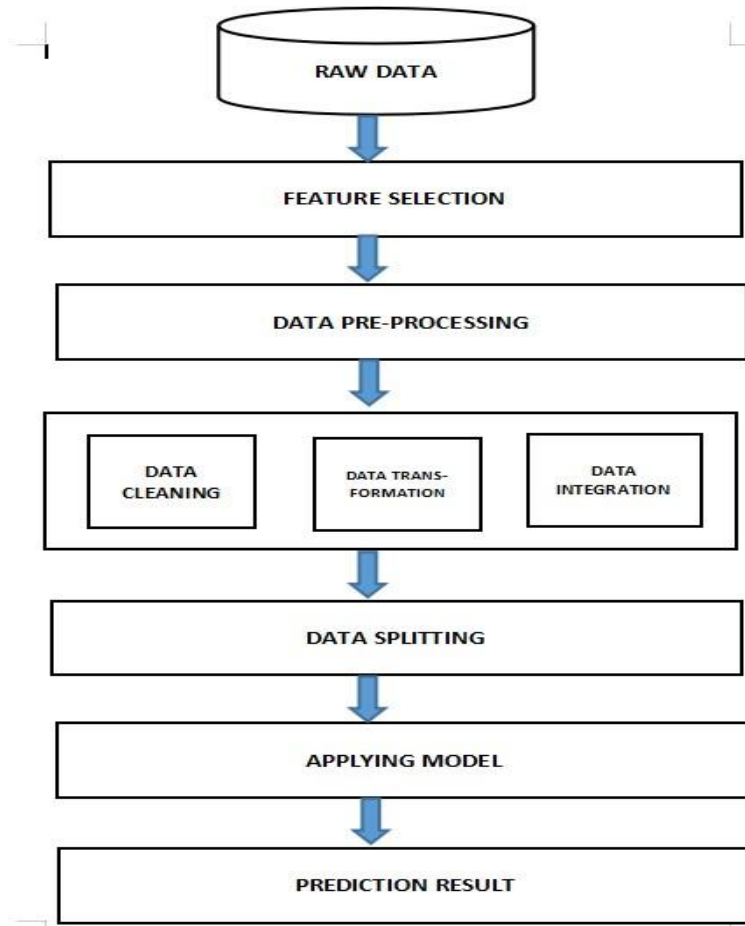
Ram : 4 GB.

System Diagram

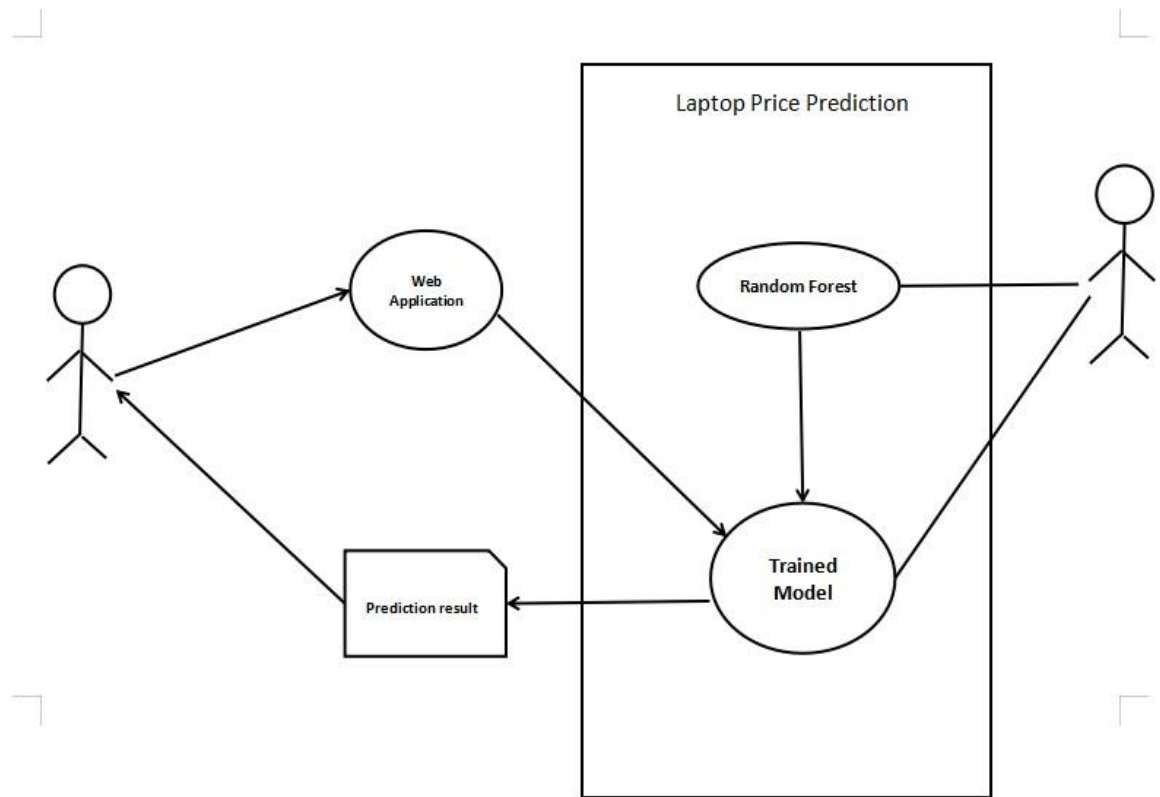
1 Data Flow Diagram



2 System Design

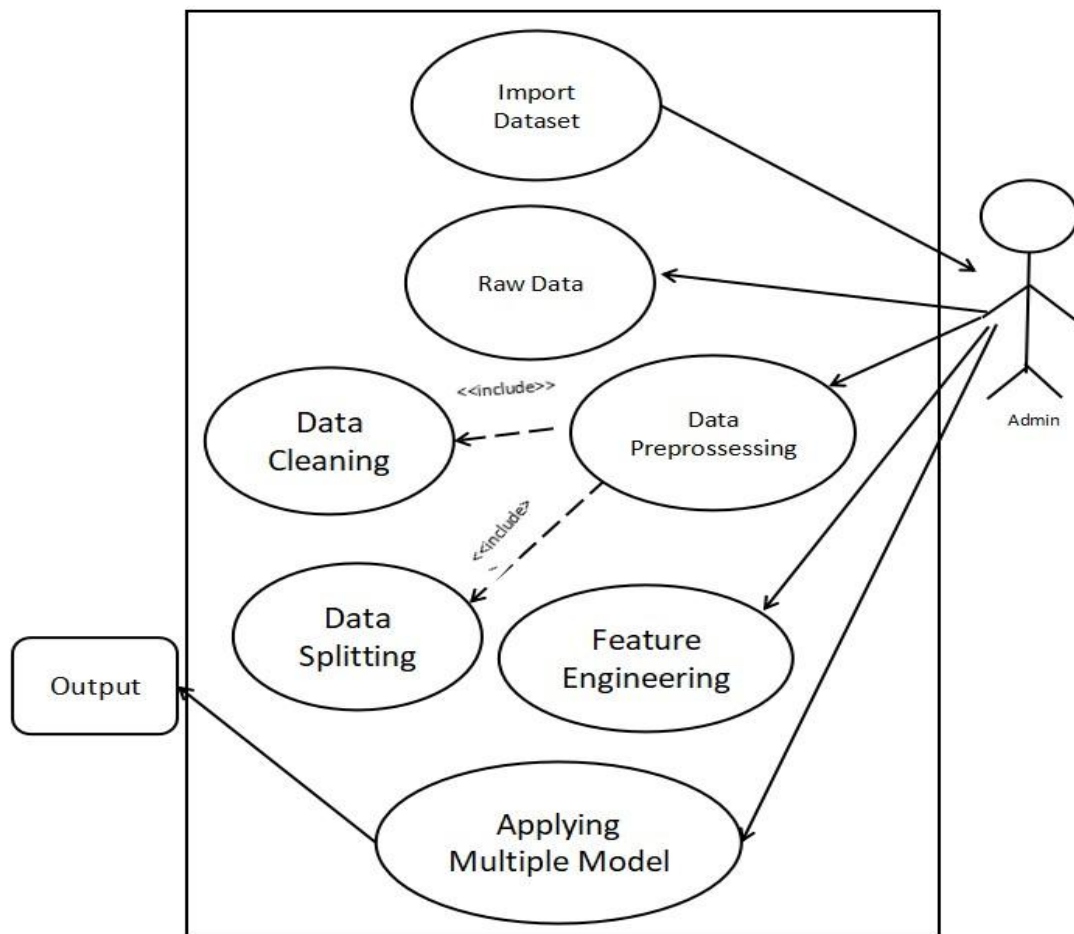


3. Use Case Diagram



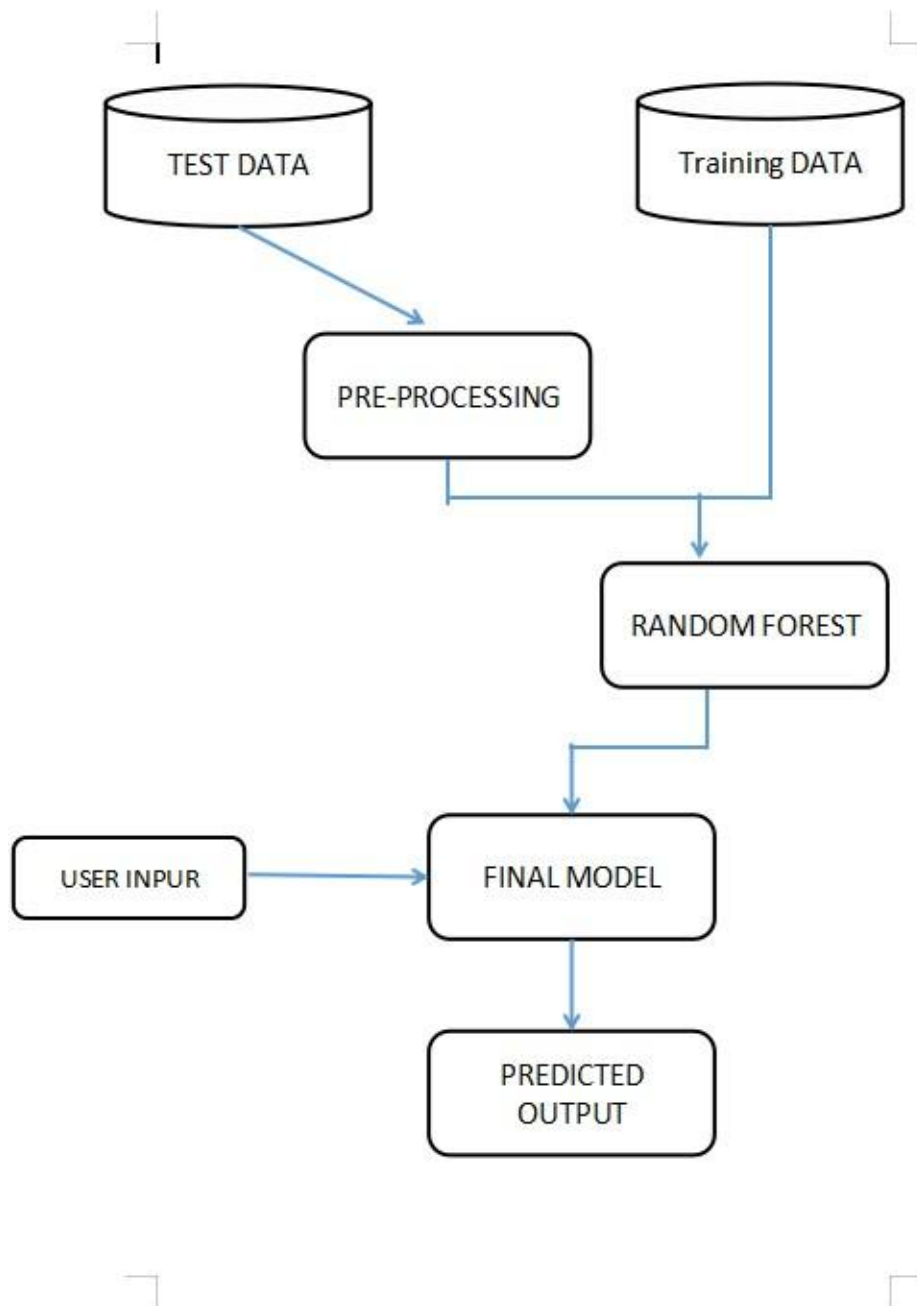
Use case name	Laptop Price Prediction
Actor	User, Admin
Precondition	User must have filled all correct specification
Main flow	a)Fill all fields correctly b)Data will go via pip-line c) System apply machine learning modeling d)Trained the model e)Collect data f)Predict Price
Output	Predict Price of Laptop

4) Use Case Diagram for Admin



Use case name	Use Case Admin
Actor	Admin
Description	The Use case describe the role of admin
Pre-Condition	User must be put correct specification
Main flow	A) Import data B) Raw Data C) Data Processing D) Data Cleaning E) Feature Engineering F) Data Splitting in Test Split and Train Split G) Applying Model H) Predict
Output	Predicted Successfully

4. Activity Diagram



Implementation

Raw Data

In this work, the data is collected from the last two years with parameters such as (Company, Type-name, Inches, ScreenResolution, CPU, RAM, Memory, GPU, OS, Weight, Price) from [keggle.com](https://www.kaggle.com) with the size of 177kb and 1300 Row

Feature Selection

As taking the raw data it consists of name, type, screen-resolution, CPU etc., by taking all set of columns decreases the accuracy of the program. So, without effecting the program main things such as price are taken into consideration so that the accuracy will not be effected.

Data Pre-processing

In this process all the missing cases are combined together when and wherever possible. In this regression models the data set is plot into a ratio of 80:20 where the 80% is trained data set and remaining 20% is validation set. So by using machine learning algorithm we perform the training for 80% of the data set and then the 20% data is validated on the trained data.

Data Cleaning-

In this method all the inaccurate data is corrected for all the record set. Data cleaning is a technique that can remove unnecessary data such as null values. Null-valued data causes the model to be inaccurate and misleading in model prediction.

```
Print df['price'].isnull
```

Data Splitting

It splits the data into two parts. One part is for testing and another for training data with a ratio of 80%:20%. The word “data” is plural, not singular.

Applying Model

Now the data is collected, and all the modeling techniques are applied to the data. The Random Forest algorithm is applied to the data-set where 80% data is trained and remaining 20% data is tested for getting the resultant output.

Prediction Result

Now the data is tested for 20% and checked with the trained data values. So by checking it can be able to predict the accuracy of the program.

Random-Forest Algorithm

The Random forest or Random Decision Forest is a supervised Machine learning algorithm used for classification, regression, and other tasks using decision trees. The Random forest classifier creates a set of decision trees from a randomly selected subset of the training set. It is basically a set of decision trees (DT) from a randomly selected subset of the training set and then It collects the votes from different decision trees to decide the final prediction.

Project Screen-Shots

Home Page

app - Streamlit

localhost:8501

Laptop Predction

Brand

Apple

Type

Ultrabook

RAM

2

weight of the Laptop

0.00

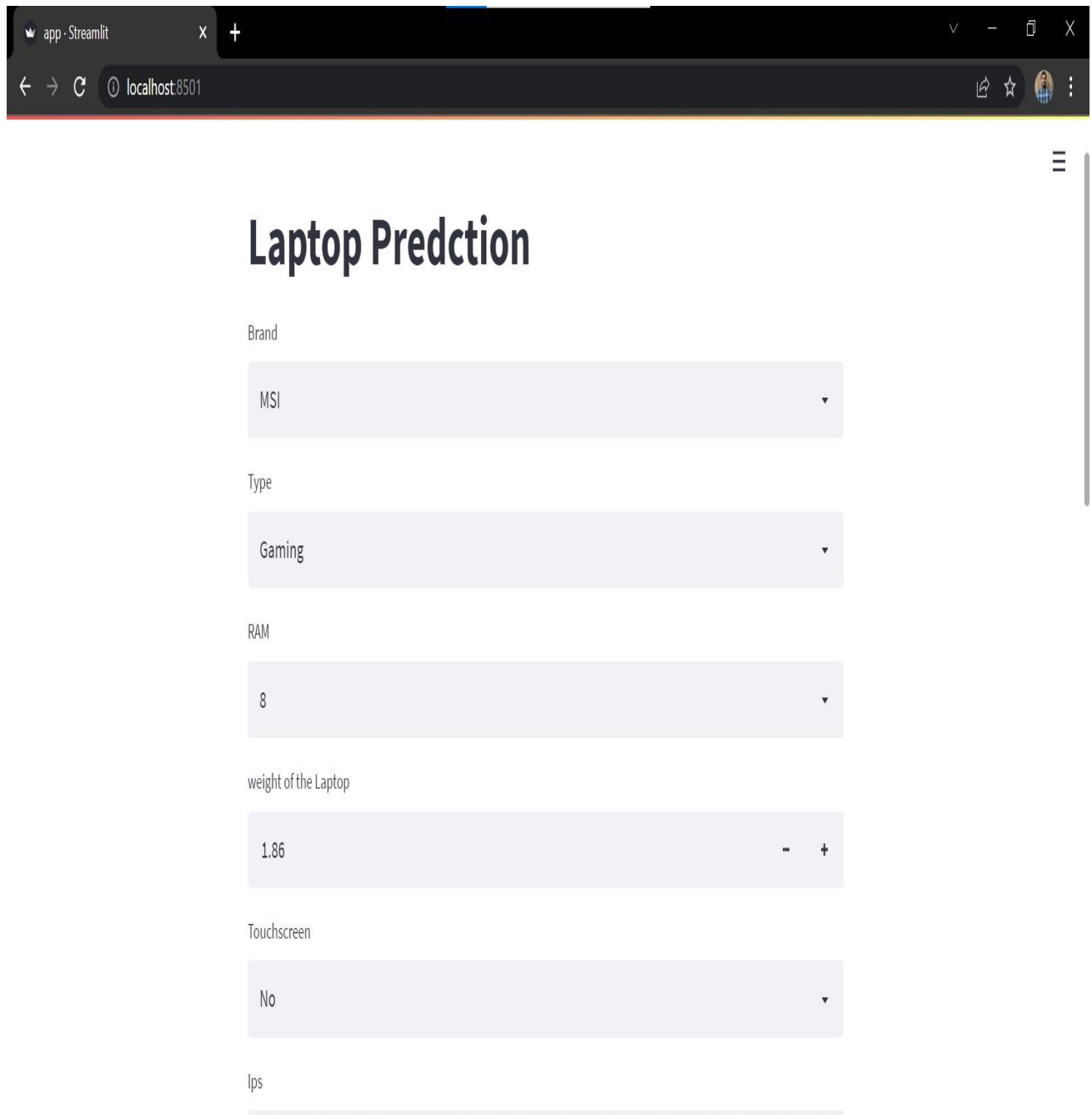
Touchscreen

No

Ips

Yes

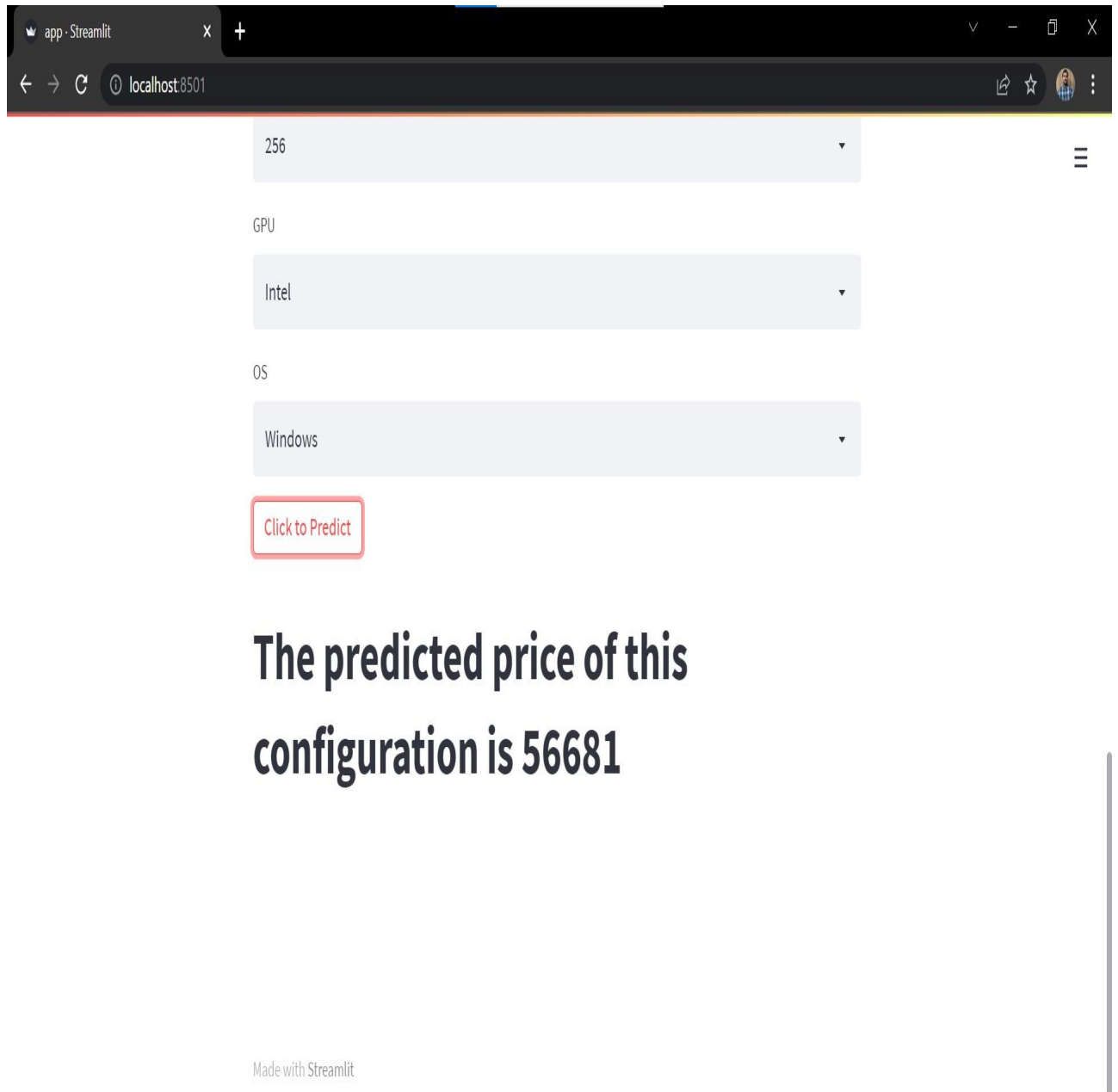
Input data



The screenshot shows a web browser window with the address bar displaying 'localhost:8501'. The browser tab is labeled 'app - Streamlit'. The application interface has a dark theme and a hamburger menu icon in the top right corner. The main heading is 'Laptop Prediction'. Below the heading are six input fields:

- Brand:** A dropdown menu with 'MSI' selected.
- Type:** A dropdown menu with 'Gaming' selected.
- RAM:** A dropdown menu with '8' selected.
- weight of the Laptop:** A numeric input field with '1.86' and minus/plus buttons.
- Touchscreen:** A dropdown menu with 'No' selected.
- Ips:** A dropdown menu that is partially visible at the bottom.

Result



The screenshot shows a web browser window with the address bar at `localhost:8501`. The application interface includes three dropdown menus for configuration: the first is set to '256', the second (labeled 'GPU') is set to 'Intel', and the third (labeled 'OS') is set to 'Windows'. Below these is a red-outlined button labeled 'Click to Predict'. The main content area displays the text 'The predicted price of this configuration is 56681' in a large, bold font. At the bottom left, it says 'Made with Streamlit'.

256

GPU

Intel

OS

Windows

Click to Predict

The predicted price of this configuration is 56681

Made with Streamlit

Conclusion and Future Work

Conclusion

The proposed Model predicts the price of a Laptop at a given specific Price accurately. Random Forest algorithm is used to design this modal. This modal can be used by all the common people who are involved in buying laptop. The application is simple to be deployed in any environment.

As future work we can develop recommendation system accordingly predicted the price

Future Work

There are several research directions for future work. First, it might be interesting to think about other recent Machine learning models, like XGBoost any many other

learning, to create prediction models. The modal can be

extended for recommendation system accordingly predicted the price. But this model has disadvantages also because of the Laptop price also fluctuate because of the new technology and new updates this can cause our

Model Fails

Bibliographer

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