LAPTEL

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Abstract: *In modern society, technology has become an indispensable source moreover a necessity. But the general populace slow to keep up with the trend face problem in using them moreover to choose between them. One of the most faced issues in recent times was the purchase of laptops. Due to the covid outbreak and work from home culture becoming a norm, laptop necessity skyrocketed. Not only offices but schools too started the medium to continue the daily routine, this caused great demand in laptops. But due to a lack of technicalities every consumer faced ambiguity in buying a laptop in the budget to meet their needs. The general populace majority belongs to the nontechnical populace. The aim of the project is to curb this issue of technical understanding for the general populace. By using the technical aspects of the laptops and converting it into statistical data, it makes it easy for consumers to compare and make optimal choices. The system uses the benchmark scores to compare the laptops in the given budget range and accordingly rank them. This ranking though not absolute but provides a clear view of these difficulties. Also, it can be used by both technical and nontechnical consumers making it user-friendly. Also, the scope of the project can be expanded and create a system for vendors to showcase their commodities with ease. In this project, we create a website that asks the user preference and budget, recommending them the laptops accordingly. The ranking tries to clear user ambiguity over laptop technicalities and help them in buying a laptop of their choice. This system has many uses.*

Keywords: Laptop Recommendation, Price Plus Benchmark Comparison, Best in Budget Laptops, Value for Money Laptop

I. INTRODUCTION

In this pandemic situation, most of the tasks such as working in corporate, education, purchasing stuff, etc has digitalized. So, the need of electronic devices such as laptops and mobiles have increased exponentially. Moreover, due to the abundance of various types of laptop devices and their specifications variance, it creates an ambiguity for people to purchase the right device for their needs. Hence, we have chosen this common issue and are trying to build a solution for the same.

Rapid digitization increased the importance of laptop exponentially. But due to poor technical knowledge, people suffer from ambiguity in buying laptops. We tried to overcome this scenario by comparing those technical aspects and suggesting the best buy.

II. LITERATURE SURVEY

In the last twelve years, the number of web user increases, so intensely leading to intense advancement in web services which leads to enlargement the usage data at higher rates. The purpose of a recommendation System is to generate meaningful recommendations to a collection of users for items or products that might interest them. Recommendation systems differ in the way they analyze these data sources to develop notions of congeniality between users and items which can be used to identify well-matched pairs. The recommendation system technology intentions to help users in finding items that match their personal interests. It has a successful usage in e-commerce applications to deal with problems related to information overload proficiently. The recommendation systems used to determine the interested items for a distinguished user by employing a variety of information resources that is related to users and items. The amount of scraping needed to scrape the target market are insurmountable. To simplify the analysis and data collections, I decided to focus mainly on three categories of laptop data to gather: Personal, Business, and Gaming. The Knowledge-based recommendation

endeavors to suggest objects based on inferences about a user's needs and preferences. In some intellect, all recommendation techniques could be described as doing some kind of inference. The Knowledge-based approaches are eminent in that they have functional knowledge; they have knowledge about how a particular item meets a particular user need, and can consequently reason about the relationship between a need and a possible recommendation. The knowledge used by a knowledge-based recommendation system can also take many forms. In our case it is Benchmark Score of the device.

III. DATA SCRAPING AND CLEANING

3.1 Data Scraping

Data scraping also known as web scraping, is this process where we can import data from a Website into a CSV file or a file which is locally stored in our computer. We used Beautiful soup and request libraries for scraping the data in python. Beautiful soup is a library which pulls data from html or xml files and Request is a HTTP library which is used for sending HTTP requests which would be more user friendly to extract the data from the website.We have used these two libraries to extract data from retail website like Flipkart for laptop information and passmark.com for benchmark scores.

3.2 Data Cleaning

The data which we retrieved from the mentioned websites is not complete and precise, so a bunch of manual work was required to clean the data such as wrong graphic card names and null values for some specifications. The way we manually entered the precise values was by referring to other websites like tech.hindustantimes.com and other retail websites.

IV. IMPLEMENTATION

4.1.React

React (also known as React.js or ReactJS) is a free source JavaScript library and open source for building user links based on UI components. It is run by Meta (formerly Facebook) and the community of individual developers and companies. React can be used as a basis for the development of one-page, mobile, or server-based applications with a framework similar to Next.js. However, React is only concerned with the management of the country and providing that status to the DOM, so creating React applications often requires the use of additional libraries to route, as well as some client-side functionality. ReactJS helps developers to create an easy to use interactive web app for user clients. It also helps in handling user input and HTTP Requests. It is also used in parsing HTTP Responses like GET, POST, PUT, DELETE data on the server.

4.2 Rest API

Representational state transfer is a software architectural style that was created to guide the design and development of the architecture for the World Wide Web. REST defines a set of constraints for how the architecture of an Internet-scale distributed hypermedia system, such as the Web, should behave. IT is an easy to use API Technique which can handle objects transfer efficiently.

4.3 Django

Django is a free Python-based web framework with open source following model-template-viewing architecture pattern. It is maintained by the Django Software Foundation, a non-profit organization founded in the US as a 501 nonprofit organization. Django helps in handling HTTP Requests and Responses. It helps in effortless creation of tables based on Class Structure and manage them. Django helps in easy sending of SQL queries using python and string formatting.

4.4 MySQL

MySQL is an open source source database management system. Its name is a combination of "My", the name of the founder of Michael Widenius' daughter, and "SQL", an abbreviation for Structured Query Language. MySQL is used mostly to create constrained and relational databases. The query execution speed is fast. It also helps in maintaining integrity of data.

V. ARCHITECTURE

In client side, we used ReactJS to create an easy to use webapp to get the input from users I.e., budget and category of laptop. Rest API retrieves these inputs and carry this request to the Django server. In server side, Django server generates a query based on the inputs received from the client side and sends that query to MySQL database. MySQL processes the query and generates a list of laptops in descending order based on their price and performance.
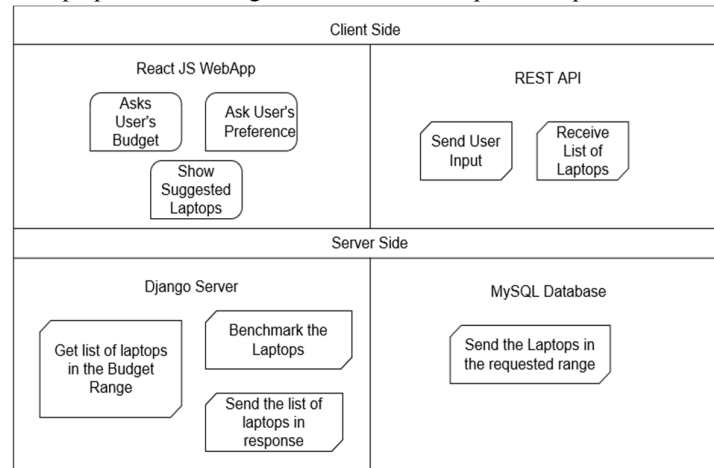

Figure 1: System Architecture

VI. DATA FLOW DIAGRAM

There are 3 main categories of laptops which user needs to choose from the user interface. After selecting the category, the user needs to insert the budget of laptop. These inputs will be retrieved and sent to the server side via API.

In the server side, the inputs retrieved from the client side, Django server converts it into a suitable SQL query. This query is then processed into the database resulting into creation of a list of laptops based on the category, budget and the performance score of laptops. The price range of laptops in the list varies from -10,000 to +10,000 of the given budget so as to provide a wide spectrum of laptops. This list of laptop is arranged in a descending order and then sent back to the client server UI via API. From the client side, the user can view and choose a laptop from our carefully processed list.
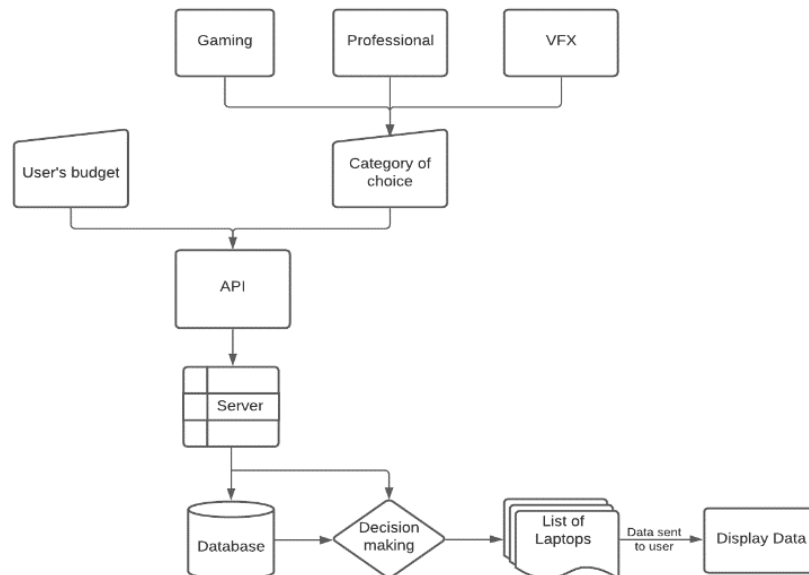

Figure 2: Data Flow Diagram

VII. CONCLUSION AND FUTURE WORK

We provided the users a simple and easy to use recommendation platform to resolve the ambiguity in buying the best possible laptop according to the budget. For future work, while we couldn't reach out goal of 100% accuracy in recommending, we did end up creating a system that can, with enough time, get very close to that goal. As with any such project, there is some room for improvement here. The very nature of this project is to fetch required data from server-side as requested. As of now, the database is small, so searching and sorting algorithm won't take long to retrieve the data. But as database increases the performance of the algorithm will decrease. We can overcome these problems by using suitable algorithms and we can also increase the performance of algorithms by properly managing database. We are also trying to develop a system where the user will get recommendations not only on laptops, but also on devices such as mobile phones & desktops.

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