



# SHOP LOCATOR AND PRE-ORDER PLATFORM: BRIDGING USERS AND RETAILERS

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**Abstract:** Clients, for the most part, look for an item depending on its class and go to a related kind of shop to get it. Nowadays shops sell various categories of goods at the same time. Thus the customers often have to spend more time to find out the most suitable products and shops before making any purchase. Sometimes the customers may not be able to achieve this, especially if they are in a hurry or unaccustomed to the nearby shops. Shop Locator and Pre-Order Platform is a Geo-location-based Progressive Web App that helps customers find the nearest stores availing a product and ordering with the minimum amount to get a required stock of products. The detailed information of searched products along with details of the shops is displayed. A navigation map is incorporated for ease of finding and reaching the shop. The app also has a smart prediction system that would predict the sales of a product and the retailer's shop. Many features like call options, ratings, and wish lists are added to improve the user experience.

**Keywords:** Progressive Web App, Geo-location, Random Forest Model, Shop Data Analysis.

## I. INTRODUCTION

A cutting-edge Geo-location-based Progressive Web designed to streamline the shopping experience for customers. In today's diverse retail landscape, where shops often sell a wide range of products, customers may find it challenging to locate the most suitable products and shops efficiently. This project addresses this issue by leveraging advanced geolocation technology to help users find the nearest stores offering a specific product. Upon launching the website, users can search for a desired product based on its category or type. The site then displays detailed information about the searched product, including its specifications, prices, and availability, along with a list of nearby shops where it can be found and also to pre-order it before it goes out of stock. This saves users valuable time and effort, eliminating the need to visit multiple stores or conduct extensive research. Additionally, this project includes a smart prediction system that analyzes past sales data to forecast future demand for a particular product. This feature enables both customers and retailers to make informed decisions about purchasing and stocking items, leading to improved efficiency and customer satisfaction. However, various user-centric features enhance the overall experience. Users can directly call the shops from within the app, rate their experiences, and create wish lists for future reference, etc... These features contribute to a seamless and personalized shopping experience, catering to the diverse needs and preferences of modern consumers.

## II. RELATED WORKS

Chan et al. [1] developed a shopbot app system on smartphones that can be used to filter and search the nearby shops that sell the desired products. The system allows users to search by voice or text. Fuzzy matching is used to extend the possibility of searching. The system considered the "easy-to-buy" criteria for searching which provides distance-based shop searching in the system. A navigation map is used here to help users to

find the favorable shop. If the desired product is not available in nearby shops, similar products in the same category will be recommended for the users. The vendors or administrators can manage the smartphone interface, and get the list of products easily through a web-based administration tool. By using this web-based interface, any products can be added or removed. Also, the user, and shop information can be managed easily. Gultekin et al. [2] proposed a Smart Location-Based Mobile Shopping Android Application. The Geolocation of the users' device is used to produce location information in the shopping application (SAGO). In this application, the users can search for a product, and then the application will identify the location and search for a product in the closest electronic local stores. The prices from each local store along with stock information are smartly listed. The product list is also displayed. With a smart filtering algorithm, this mobile shopping application minimizes the error in searching and listing results. The performance is satisfactory when compared to the goals of this shopping application. Zuo et al. [3] suggested predicting customer purchase behavior in a grocery shop using machine learning techniques. They attempted to measure purchase behavior according to factors such as customers' age, gender against income, product price, and sale promotion. They employed two machine learning methods: support vector machine (SVM) and Bayes classifier and thus explored their performance with the real-time data. Maheswari et al. [4] proposed a system that used SVM Classifier for predicting customer behavior in online shopping. Joshi et al. [5] proposed a random forest method for predicting the online buying behavior of Indian customers. They attempted to map various factors that influenced the online buying behavior of Indian customers. They tested different product categories, across diverse geographic locations in India. For each product category, they developed and validated the Random Forest prediction model. The result was that they could understand whether the Indian online shopping market is useful or whether the conventional channel is preferred by the buyer for each product category. Jayawilal et al. [6] proposed a smart shopping list which was a mobile software solution. It enabled the users to shop for groceries avoiding the usual shopping complications. A Shop Locator is there to suggest to the user the best supermarket to go to, after checking the grocery list such that most of the items can be bought from there. Also, an item recommendation provision is implemented with the help of the Apriori algorithm. This helps the user to remember any missing items or items that can be interesting to him.

Borkar et al. [7] proposed an Android-based shopping application. Most people prefer shopping offline because of concerns about money security. This paper presents a new method that collaborated ease in online shopping as well as the sense of security money for customer satisfaction. The user can scan the bar code of the item to be purchased with the camera feature in their smartphone and then directly add it to the cart. Thus the long queue in shops just for scanning the item is avoided. Also, the chances for the fakes that happen in online shopping can be reduced. The purchase history of a customer is maintained in the app which can be used by the customer at the time of the next purchase.

Tandel et al. [8] studied the impact of Progressive Web Apps on Web App Development. In 2014, the number of global users accessing the web on mobile devices exceeded those accessing it on a desktop. This indicates that making web applications mobile-friendly is very important. Companies often comprehend the need to develop native applications or hybrid applications to overcome the limitations that the web as a platform enforces on mobile devices. In most cases, they must develop their web, iOS, and Android applications. A native application is generally coded in a device-dependent programming language such as Java with the Android Studio as IDE. These applications are generally installed through app stores which are generally provided on mobile phones and also have rich access to device hardware through APIs.

Khawas et al. [9] considered an application of Firebase in Android App Development. Firebase is well-thought-out as a web application platform. It can help developers to build high-quality mobile apps. It stores the data in JavaScript Object Notation (JSON) format. The insertion, updation, and deletion of data don't use queries in this format. It is the backend of a system that is used as a database for storing data. Faster and efficient Android apps can be built because PHP is not required to communicate with the database. The communication with the database is directly from JAVA which provides a secure channel. Firebase is being updated by Google regularly. It can be used in Android as well as to connect cross-platform. The work can be extended further after exploring new possibilities in Android applications. The customer behavior continues to change over time. So marketers need to find a strategy such that they become available where their customers are. As a result, companies are moving rapidly toward making mobile apps a common business place. The leading companies in the industry strongly depend on the personal nature of mobile for creating a satisfying customer. A mobile app can provide a better shopping experience. The app-specific features such as geo-location, brands can produce relevant mobile moments. More specifically, connecting user location to personalized notifications helps to make the app more attractive and relevant to users. This will not only create a better user experience but also give a great boost to business [10].

The proposed system Shopping Spree is a Geo-location Progressive Web App in which buyers can search and filter the nearby shops where the desired products are sold. The information on related shops and products is displayed in the result. Also, the app is provided with a navigation map showing the best route to the target shops. The Shopping Spree app also has a smart prediction system that would predict the future sales of a product which can be helpful to the sellers while planning to take new stock of products [11]. The prediction system works on a Random Forest Algorithm.

### III. PROBLEM DEFINITION

The problem at hand revolves around the efficient categorization of news articles into predefined topics or types. It lies in the inefficiencies and frustrations experienced by both buyers and sellers within the retail landscape. From the buyer's perspective, there's a notable inconvenience in locating nearby shops that offer desired products, particularly in unfamiliar areas or situations where mobility is limited. Furthermore, the disappointment of finding a desired item out of stock after making the effort to visit a shop leads to wasted time and potential dissatisfaction. Additionally, the lack of pre-order options exacerbates the challenge of securing desired products in advance. On the seller's side, inventory management poses significant challenges, with issues such as stockouts, overstocking, and inefficient resource allocation being commonplace. Without access to advanced analytics and forecasting tools, retailers struggle to predict future sales trends and make informed decisions regarding stock replenishment and pricing strategies. Moreover, small and medium-sized retailers face stiff competition from large e-commerce platforms that offer advanced technology and convenience features to consumers. Thus, the problem definition revolves around the need to bridge these gaps and inefficiencies, enhancing convenience, efficiency, and transparency in the shopping process for all stakeholders involved. Moreover, the rise of online shopping has introduced new challenges, such as delivery delays, out-of-stock items, and cybersecurity concerns, further complicating the retail landscape. Existing solutions often lack integration and fail to address the needs of both buyers and sellers comprehensively, leading to fragmented and disjointed shopping experiences.

### IV. OVERVIEW OF THE PROJECT

The project is a comprehensive solution designed to revolutionize the retail experience for both buyers and sellers. At its core, the platform aims to bridge the gap between consumers and retailers by offering seamless access to nearby shops, product information, and pre-order options. For buyers, the platform provides convenience and efficiency by utilizing GPS technology to locate nearby shops, offering detailed product information, and facilitating pre-ordering for desired items. Users can navigate to shops effortlessly, schedule pickups or deliveries, and avoid the frustration of finding items out of stock. On the other hand, for sellers, the platform offers sophisticated inventory management tools, leveraging data analytics and predictive algorithms to optimize stock levels and pricing strategies. Retailers can gain valuable insights into sales trends, streamline order processing, and compete more effectively in the retail landscape. The platform aims to revolutionize the retail experience by addressing these pain points, making it more seamless and satisfying for all stakeholders involved. With its user-friendly interface, personalized recommendations, and robust security measures, the project aims to enhance the overall shopping experience, fostering convenience, efficiency, and satisfaction for both buyers and sellers alike.

### V. BACKGROUND OF WORK

#### 5.1 Convenience for Users

Your website provides a convenient solution for users who want to purchase products without knowing the location of nearby shops or their opening hours. It saves them time and effort by allowing them to browse and pre-order products online.

#### 5.2 Increased visibility for shops

By registering their shops on your website, shopkeepers can increase their visibility and reach a wider audience of potential customers. They can also update their product details and inventory, helping them attract more customers and manage their business more efficiently.

#### 5.3 Pre-ordering functionality

The pre-ordering functionality of your website allows users to reserve products before they are out of stock, ensuring they can get the items they want even if they're in high demand.

## 5.4 Centralized database

Your website acts as a centralized database for both users and shopkeepers, making it easier to manage product listings, orders, and inventory. This can help streamline business operations and improve communication between users and shopkeepers.

## 5.5 User reviews and ratings

By allowing users to leave reviews and ratings for products and shops, your website helps build trust and credibility. Positive reviews can attract more customers, while constructive feedback can help shopkeepers improve their products and services.

## VI. PROPOSED SYSTEM

In today's fast-paced world, where convenience and efficiency are paramount, developing a comprehensive Shop Locator and Pre-order Platform emerges as a beacon of innovation, bridging the divide between buyers and sellers in the retail landscape. At its core, this platform is meticulously crafted to cater to the evolving needs of modern consumers while empowering retailers with invaluable tools for stock management and sales optimization. For buyers, navigating the bustling streets or digital marketplaces is simplified to a few taps on their smartphones. With the aid of GPS technology, the platform seamlessly locates nearby shops, offering a map interface adorned with pins representing various retail establishments. Furthermore, users gain access to a treasure trove of product information, from detailed descriptions to enticing images, all effortlessly accessible within the confines of their screens. Navigation assistance becomes second nature, guiding users to their desired shops precisely and offering multiple transportation options to suit individual preferences. Meanwhile, for retailers, the platform serves as a beacon of insight and foresight, offering sophisticated stock management tools bolstered by predictive algorithms. Through data analytics, sellers gain invaluable foresight into future sales trends, enabling informed decisions on inventory replenishment and pricing strategies. Moreover, the platform facilitates seamless order management, from processing to fulfillment, ensuring a frictionless experience for both buyers and sellers alike. Integrating a robust feedback and review system further enhances transparency and accountability, fostering a culture of continuous improvement within the retail ecosystem. Personalized recommendations powered by machine learning algorithms add a touch of bespoke service, elevating the shopping experience to new heights. In essence, the Shop Locator and Pre-order Platform represents more than just a technological marvel; it embodies the symbiotic relationship between innovation and consumer empowerment, heralding a new era of retail where convenience, efficiency, and satisfaction reign supreme.

## VII. SYSTEM ARCHITECTURE

A system architecture or systems architecture is the conceptual model that defines the structure, behavior, and views of a system. An architecture description is a formal description and representation of a system, organized in a way that supports reasoning about the structures and behavior of the system. A system architecture can comprise system components, the externally visible properties of those components, and the relationships (e.g. the behavior) between them. It can provide a plan from which products can be procured, and systems developed, that will work together to implement the overall system. There have been efforts to formalize languages to describe system architecture; collectively these are called architecture description languages (ADLs).

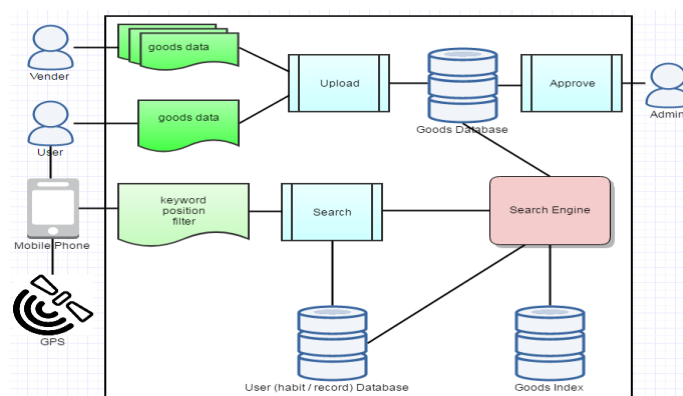


Fig 7.1 System Architecture



## VIII. CONCLUSION

In conclusion, this is one of the best applications to find the user's required items in the nearest location. We can overcome the drawbacks of an existing system like time and risk in searching for the product, and expenses involved in the vehicles. The main advantage of the proposed system is that we can not only know the product availability in the store but also the available quantity of that product and the route map for all the stores wherever the product is available along with distance. This application makes the user very comfortable to the user. Customers are now able to browse and search for their desired products and access them with ease. The new spearheading feature can list all the shops selling the required product on the map screen. The customers can rate the products and pre-order to improve user experience and add their favorite products to the Wish list. The shop owners can see individual product views and predicted sales. To achieve this prediction system, a custom API and deployed to the cloud to ensure high availability.

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