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REAL TIME STREET VENDOR FINDER

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***Abstract*— This project proposes a Street Vendor Location App that helps users find nearby fruit and vegetable vendors in real time. Vendors can register, share their GPS location, and mark availability, while customers can search and view vendors on an interactive map. The system uses GPS, Maps API, and a database to provide accurate results, improving customer convenience and giving digital visibility to street vendors. The Street Vendor Finder Project is a location-based application developed to help users easily locate nearby street vendors and access their products and services. Street vendors are an essential part of urban economies, offering affordable goods, but they often lack proper visibility and digital presence. This project addresses this issue by providing a platform that connects vendors with customers through modern technology. The application uses GPS and mapping services to display real-time locations of vendors, allowing users to search based on categories such as food, fruits, vegetables, and other daily needs. It also provides additional features like vendor details, operating hours, ratings, reviews, and navigation support. Vendors can register themselves on the platform to improve their reach and attract more customers. The system is designed using web or mobile technologies with a backend database to manage user and vendor information efficiently. By bridging the gap between street vendors and consumers, the project enhances accessibility, promotes small businesses, and supports the growth of the informal sector.**
Overall, the Street Vendor Finder Project demonstrates how technology can be effectively utilized to empower local vendors, improve customer convenience, and contribute to economic development.

INTRODUCTION

Street vendors play a vital role in the urban economy by providing affordable goods and services such as food, fruits, vegetables, and daily essentials. Despite their importance, most street vendors lack digital visibility, making it difficult for

customers—especially new users or tourists—to locate them easily. Traditional methods of finding vendors rely on word-of-mouth or physical searching, which is time-consuming and inefficient.

To address this problem, the **Real-Time Street Vendor Finder** system is developed as a location-based application that connects street vendors with customers using modern technology. The application utilizes GPS and map integration to display the real-time location of nearby vendors, enabling users to quickly search and navigate to them.

In this system, vendors can register themselves, update their live location, specify their products or services, and manage their availability. On the other hand, customers can search for vendors based on categories, view detailed information such as location, timings, ratings, and reviews, and get directions through an interactive map interface.

The application is built using web and mobile technologies with a backend database to efficiently manage user and vendor data. By providing a centralized digital platform, the system bridges the gap between street vendors and customers, improves accessibility, and enhances user convenience.

Overall, this project demonstrates how technology can be effectively used to support small-scale vendors, promote digital inclusion, and contribute to economic growth by making local services more accessible and organize

I. LITERATURE SURVEY

Bhowmik, S.K. (2005):
In his work *"Street Vendors in Asia: A Review"*, Bhowmik explains the important role of street vendors in urban economies. The study highlights that vendors provide affordable goods but lack formal recognition and digital support, which limits their visibility and growth.

Mitullah, W.V. (2003):
Mitullah, in *"Street Vending in African Cities: A Synthesis of Empirical Findings"*, discusses the challenges faced by vendors such as poor infrastructure, lack of regulation, and limited access to customers. The study emphasizes the need for better systems to support vendor activities.

Goodchild, M.F. (2007):
Goodchild introduced the concept of *Volunteered Geographic Information (VGI)* in his paper *"Citizens as Sensors"*. This work explains how user-generated geographic data can be used in location-based applications, forming the foundation for modern GPS-based systems.

Schneider, M. (2011):
In research related to location-based services, Schneider explains how GPS and mobile technologies can be used to track real-time locations and improve navigation systems. This concept is essential for applications that depend on user and object location tracking.

Zhou, B., et al. (2016):
Zhou and colleagues studied mobile application adoption and highlighted how smartphones and GPS technologies improve accessibility to services. Their research supports the idea that mobile apps can bridge the gap between service providers and users.

II. PROPOSED METHODOLOGY

The proposed system, **Real-Time Street Vendor Finder**, is designed to connect street vendors and customers using location-based technology. The methodology follows a structured approach involving data collection, processing, and real-time communication between system components.

1. Data Collection

Street vendors register in the application by providing details such as name, type of products (food, fruits, vegetables, etc.), working hours, and location. The system uses GPS to capture real-time latitude and longitude of vendors. Customers also allow location access to fetch nearby vendor data.

2. User Authentication

Both vendors and customers must register and log in to the system. Authentication ensures secure access and protects user data. Vendors can manage their profiles, while customers can search and interact with the system.

3. Location Tracking

The system uses GPS services to continuously track vendor locations. The location data is sent to the backend server, where it is processed and updated in the database. This enables real-time tracking of both static and moving vendors.

4. Data Processing

The backend server processes user requests by combining:

- User location
- Vendor location data
- Search inputs (category/keywords)

A location-based search algorithm is used to identify nearby vendors. The system calculates the distance between user and vendors and filters results within a specific range.

5. Search and Filtering

Users can search vendors based on categories or keywords. The system filters vendors based on:

- Distance
- Availability
- Ratings

This improves the accuracy and relevance of results.

6. Map Integration

The application integrates map services (such as OpenStreetMap) to display vendor locations visually. Users can view vendor markers on the map and get navigation directions to reach them easily.

7. Database Management

All data such as user details, vendor information, location coordinates, and reviews are stored in a database (MongoDB/MySQL). The backend retrieves and updates this data efficiently.

8. Real-Time Updates

The system ensures real-time updates using APIs and communication protocols. Vendors can update their availability and location, which is instantly reflected in the user interface.

9. Output (User Interface)

The final output is displayed to users in the form of:

- Vendor list
- Map view
- Vendor details (location, products, ratings)

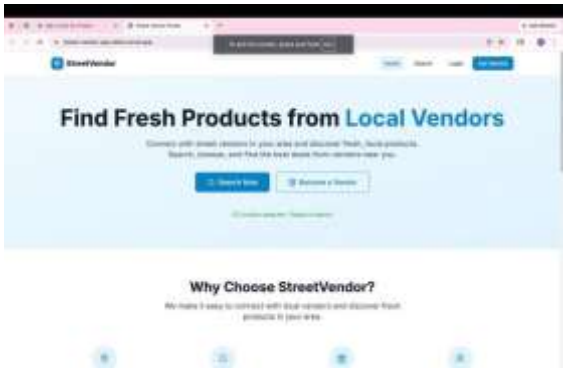
10. System Architecture

The proposed system architecture enables seamless interaction between customers and vendors through a mobile or web-based frontend interface. When a user sends a request, such as searching for nearby vendors, the request is forwarded to the backend server built using Node.js and Express.js. The backend acts as the central processing unit, handling requests, retrieving and storing data in the MongoDB database, and coordinating with external services. Real-time location data is obtained through a GPS service, which continuously tracks vendor positions and sends this information to the backend. The system then uses the OpenStreetMap Maps API to convert this data into a visual map representation. Finally, the processed information is sent back to the frontend, where users can view nearby vendors and their live locations on an interactive map, ensuring a dynamic and user-friendly experience.

III. RESULT AND DISCUSSION

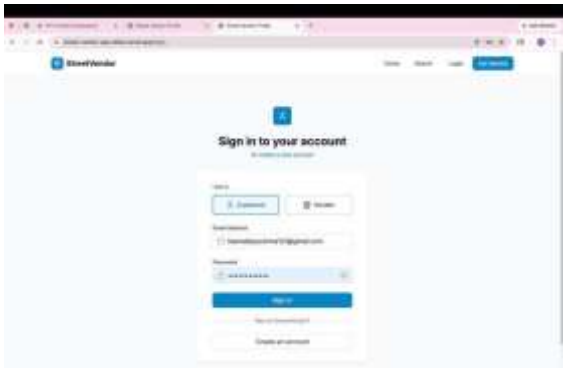
The **Street Vendor Finder Project** was successfully developed and tested, achieving its main objective of helping users easily locate nearby street vendors. The system effectively integrates location-based services, allowing users to search vendors based on their current location and preferences. All major functionalities such as user registration, login, vendor registration, search by category, real-time location tracking, and review system were implemented and tested successfully. The application provides accurate and quick results, displaying vendor details along with map-based navigation.
The system was found to be user-friendly, efficient, and reliable during testing. Vendors were able to update their details and improve their visibility, while users could easily access vendor information and provide feedback.
Overall, the project demonstrates how technology can be used to connect customers with street vendors, improve accessibility, and support small-scale businesses. The system meets its intended goals and performs effectively in real-time scenarios

A. User Interface Design of Street Vendor Finder System



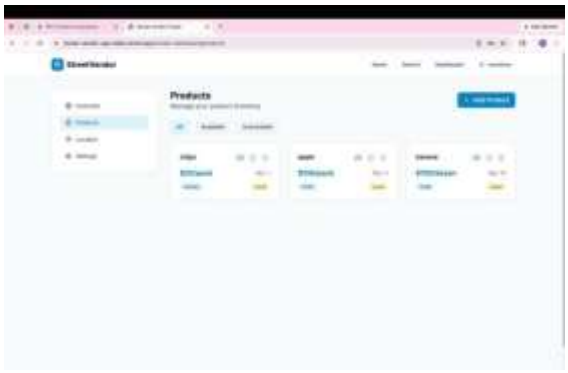
The login option is available in the top navigation bar of the Street Vendor Finder application. It allows existing users (customers or vendors) to securely access their accounts by entering valid credentials such as email and password. Once the user clicks on the **Login** button, they are redirected to a login page where they can authenticate themselves. After successful login, users can access personalized features like searching vendors, viewing details, updating profiles, and providing reviews. This ensures secure and authorized access to the system

B.User Login Interface



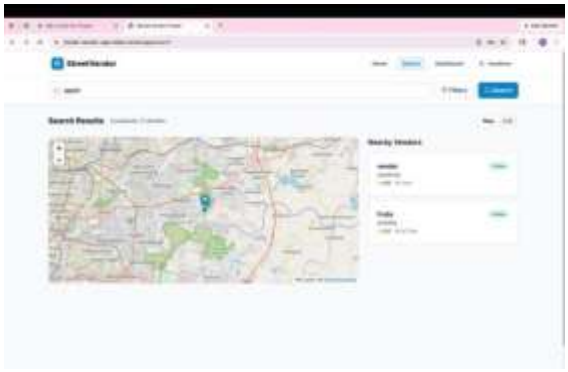
The image shows the **login page of the Street Vendor Finder application** , where users can securely access their accounts. The interface is simple and user -f riendly, allowing both customers and vendors to log in using their credentials.
At the center of the page, users can select their role as either **Customer** or **Vendor**, ensuring role -b ased access to the system. The login form requires an email address and password, which are used for authentication. A **"Sign in"** button is provided to submit the details and access the system. Additionally, the page includes an option for new users to **create an account** , making it easy for first -t ime users to register. This design ensures secure login, easy navigation, and smooth user experience.

C.Vendor Product Management Dashboard



The image shows the **vendor dashboard** of the Street Vendor Finder application, specifically the **Products section** . This interface allows vendors to manage their product inventory efficiently. Vendors can view available products, check quantities, update details, and add new items. The dashboard provides filtering options such as *All*, *Available, and Unavailable* to organize products easily. Each product card displays details like product name, price, category, and quantity. Vendors can also perform actions like editing or deleting products. Overall, this interface helps vendors maintain and update their product listings in a simple and organized way.

D.Vendor Search and Map View Interface



The image shows the **search results page** of the Street Vendor Finder application. This interface allows users to search for vendors or products (e.g., “apple”) and view results both on a map and in a list format. The system displays nearby vendors based on the user’s location using a map powered by location services. Users can easily identify vendor locations through markers on the map. On the right side, a list of nearby vendors is shown along with details such as vendor name, status (online/offline), distance, and ratings. This page helps users quickly find vendors, compare options, and choose the nearest or most suitable vendor.

E.Street vendor Navigation System

This figure represents the navigation feature of the Street Vendor Finder system using Google Maps integration. It shows the route from the user’s current location to a selected street vendor location (Meghana Satyam Block 2).The system calculates the optimal route based on real -t ime traffic conditions, displaying the fastest path along with alternative routes. The estimated travel time ranges from 33 to 37 minutes, covering a distance of approximately 17 km. This functionality enhances user convenience by enabling efficient navigation to nearby vendors. It also supports multiple transportation modes such as bike, car, and walking, making the application flexible for different users. In the Street Vendor Finder project, this module plays a crucial role in improving user experience, reducing travel time, and helping users easily locate vendors in real -time.

IV. CONCLUSION

The **Street Vendor Finder Project** has been successfully developed as a smart and efficient solution to connect customers with nearby street vendors. The system makes use of modern technologies such as GPS, map integration, and web/mobile applications to provide real -time vendor information and improve accessibility. Throughout the development process, all major modules such as user registration and login, vendor registration, product management, location tracking, search functionality, and review system were implemented successfully. The system was tested thoroughly and was found to be reliable, user -f riendly, and capable of delivering accurate results. This project plays an important role in supporing small -s cale and informal vendors by giving them a digital presence andincreasing theirvisibility. At the same time, it benefits customers by saving time and effort in finding nearby vendors and making in formed decisions through ratings and reviews. Additionally, the system promotes digital transformation and encourages the use of technology in everyday activities. It can be further enhanced by adding advanced features like online payments, delivery services, and AI -b ased recommendatins. In conclusion, the Street Vendor Finder Project effectively meets its objectives and demonstrates how technology can be used to solve real -w orld problems, improve user convenience, and contribute to the growth of local businesses.

V. FUTURE SCOPE

The Street Vendor Finder Project has great potential for further development and enhancement. With the advancement of technology, several new features can be integrated to improve the system's functionality, usability, and overall performance.
In the future, the application can include online payment integration, allowing users to make secure digital transactions using UPI, debit/credit cards, or mobile wallets. A delivery system can also be introduced so that users can order products directly from vendors and receive them at their location, making the platform more convenient. The system can be enhanced with real -t ime tracking, enabling users to track moving vendors (such as food carts) on the map. Additionally, implementing AI- b ased recommendations can help suggest vendors based on user preferences, search history, and ratings, improving user experience.
Another important improvement is multilingual support, which will make the application accessible to a wider audience, especially in diverse regions. Push notifications can be added to inform users about nearby vendors, special offers, or updates in real time. For vendors, an advanced analytics dashboard can be introduced to track their performance, customer feedback, and sales trends. Security features can also be strengthened to protect user data and ensure safe transactions. Furthermore, the system can be expanded to include offline functionality, where basic features work even without an internet connection. Integration with government or local authority systems can also help in vendor verification and regulation. Overall, these enhancements will make the system more scalable, intelligent, and beneficial for both users and vendors.

REFERENCES

The development of the Street Vendor Finder Project involved the use of various learning resources, tools, and documentation to ensure proper implementation and understanding of concepts.
• Official documentation of Google Maps API / OpenStreetMap for map integration and location services
• Documentation of Node.js and Express.js for backend development
• MongoDB / MySQL documentation for database design and management
• Frontend development references from W3Schools and MDN Web Docs
• Programming tutorials and concept explanations from GeeksforGeeks
• Community discussions and problem -s olving references from Stack Overflow
• Video tutorials from YouTube for practical implementation guidance
• Sample projects and code references from GitHub repositories
These resources provided valuable guidance in understanding concepts, solving errors, and implementing the project successfully.