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Home Services Recommendation System using Machine Learning for Urban Areas

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Abstract: *The Kotlin-based on-demand home service system streamlines household tasks by offering services such as repairs, cleaning, gardening, and plumbing. In today's fast-paced world, it provides quick solutions for maintaining a clean and hygienic living environment. The Housekeeper Finder app is a prominent player in this space, utilizing advanced machine learning algorithms to deliver personalized service recommendations based on user preferences. It includes essential services like cooking, laundry, and elder care, along with a robust feedback system to improve service quality. Users can easily book services from anywhere, leveraging GPS technology to connect them with nearby providers. The "Domestic Android Application for Home Services" further enhances accessibility through location-based service requests and mapping capabilities for a seamless user experience across platforms.A s cities transition into Smart Cities, integrated information systems open new avenues for urban service recommendations, fostering liveability and sustainability. Recommendation systems analyse user behaviour to provide tailored suggestions using techniques like collaborative filtering and hybrid methods. In response to the challenges of modern work culture, the e-commerce landscape now offers easy access to essential services via mobile applications, ultimately transforming how households address their needs and promoting safer, cleaner living space.*

Keywords: Android application, GPS, Smart Cities, Services, Interface, E-commerce

I. INTRODUCTION

The convergence of information and communication technology has revolutionized how we access services and information, particularly through mobile applications. In today's fast-paced environment, individuals often struggle to manage household tasks alongside their professional and personal commitments.[4] Recognizing this challenge, platforms like E-reparar have emerged, providing a solution for repairing electronic appliances at home. E-reparar enables customers to report issues with their devices online, connecting them with certified service providers who come directly to their location, thereby saving time and effort. In every household, numerous electronic devices like computers, mobile phones, and kitchen appliances are essential for daily life.[13] However, these devices are prone to breakdowns over time due to wear and tear or improper use. Regular maintenance and timely repairs are crucial to prolong their lifespan. E-reparar not only caters to electronic appliances but also expands its services to automobiles and industrial automation, particularly addressing the repair needs in semi-urban and rural areas where such services are often limited. [13]As people relocate to new cities, they face difficulties finding trustworthy local contractors for various home repairs, from plumbing to carpentry. To meet this demand, numerous start up in India have created platforms that serve as intermediaries or direct service providers for home services. These applications streamline the process, allowing users to order services directly through a user-friendly interface, eliminating the cumbersome process of traditional call center. The "Domestic Android Application for Home Services" exemplifies this trend by connecting users with service providers based on location, utilizing GPS for precise matching.[11] Users can register, choose from a range of services, schedule appointments, and make payments seamlessly through the app. Features such as feedback systems enhance user experience and service quality. Another innovative initiative, the Housekeeper Finder project,

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offers a comprehensive suite of on-demand home services, including cleaning, cooking, and elderly care.[2]This app leverages machine learning to personalize recommendations based on user preferences and experiences. Its feedback mechanism encourages customer participation in improving service delivery. The rising demand for home service applications reflects broader societal trends, driven by urbanization, increased disposable income, and the convenience of on-demand services. As people lead busier lives, they are willing to invest in services that offer quality and efficiency. Traditional methods of finding service providers often lead to frustrations, making reliable applications a desirable alternative. Unlike existing applications like Urban Clap, which are limited to metropolitan areas, the discussed platforms aim to reach users across all cities in India. By offering a contract-based model for apartment complexes, these services provide a continuous maintenance solution at reasonable rates, ensuring that residents have access to skilled professionals[10].

II. LITERATURE SURVEY

"On-Demand Home Service Application using Machine Learning"- Er. Farida Attar1, Bushra Rizvi2, Nafees Posharkar3 , Sana Shaikh4 , Zubiya Shaikh5.Users can book the service worker s highlight is using Machine Learning and Deep Learning Image processing techniques to make the application dynamic and quick and responsive.[1]

"Housekeeper recommendation system using machine learning"-Vaishnavi Bhamare, Pranjal Teli , Gauri Waykole , Rutika Bhalerao , Vaishali Khandave The Housekeeper Finder application is poised to revolutionize the way home services are accessed and delivered, providing high-quality cleaning and assistance services with the ease and efficiency that our digital era demands.[2]

"Private bidding platform for home services"-[1]Mrs. N. Kiranmai, [2]Dr.Muntha Raju, [3]Musini Narendar, [4]Neela SaiKiran. Its focus on user management, detailed job postings, transparent bidding, and direct communication promotes efficiency, transparency, and convenience for both service seekers and providers[3]

"MAZDOOR"- Online Application for Household Services Author Name: N.M. Indravasan Description: In his research, M. Indravasan noted that individuals are deeply immersed in their demanding work routines. However, when an unforeseen household chore arises, it becomes a distraction from their work. E-Commerce emerges as a crucial solution to this problem by offering a platform that conveniently provides a multitude of services with just one click[4].

III. EXISTING SYSTEM

3.1. Overview of Existing Systems

UrbanClap (now Urban Company)

- **Description**: UrbanClap is a popular platform that connects users with local service professionals, including plumbers, electricians, and cleaners.
- **Features**:
- **Recommendation System**: Utilizes a combination of collaborative filtering and content-based filtering to suggest suitable service providers.
- **GPS Tracking**: Users can track the location of service providers in real-time.
- **Rating & Review System**: Users can rate services after completion, influencing the visibility of service providers.

3.2 TaskRabbit

- **Description**: TaskRabbit allows users to find and hire local freelancers for various tasks, including home repairs and cleaning services.
- **Features**:
- **Algorithm**: Employs a hybrid recommendation system that combines user preferences and service provider ratings.
- **GPS Functionality**: Facilitates real-time tracking of taskers to enhance scheduling and service delivery.
- **Feedback Mechanism**: Users can leave detailed reviews and ratings, which help maintain service quality and accountability.

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3.3 Handy

- **Description**: Handy specializes in home cleaning and handyman services, connecting users with vetted professionals.
- **Features**:
- **Recommendation Engine**: Uses machine learning algorithms to suggest service providers based on user profiles and historical data.
- **GPS Integration**: Enables users to track service professionals during their journey to the appointment location.
- **User Ratings**: Post-service ratings and reviews play a crucial role in enhancing provider profiles and service trustworthiness.

3.4 Thumbtack

- **Description**: Thumbtack connects users with local professionals for a variety of services, from home improvement to event planning.
- **Features**
- **Recommendation System**: Combines user requirements with service provider availability and reviews to offer tailored recommendations.
- **Real-Time GPS Tracking**: Users can track service providers' locations and estimated arrival times.
- **Review System**: Users provide feedback on their experiences, which helps improve service matching.

3.5 HomeAdvisor

- **Description**: HomeAdvisor focuses on home improvement and repair services, offering a network of qualified service providers.

Features:

- Smart Matching Technology: Uses user input and data analytics to Connect users with the most suitable service professionals.
- GPS Tracking: Offers tracking features to provide users with updates on service provider arrival.
- Rating and Review System: Encourages users to leave ratings and reviews, which are used to enhance the recommendation process

IV. COMPARATIVE ANALYSIS OF EXISTING SYSTEMS

System	Recommendation Algorithm	GPS Tracking	Rating & Review System
UrbanClap	Collaborative & Content-based	Yes	Yes
TaskRabbit	Hybrid (user preferences & ratings)	Yes	Yes
Handy	Machine Learning	Yes	Yes
Thumbtack	Data-driven matching	Yes	Yes
HomeAdvisor	Smart Matching Technology	Yes	Yes

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V. PROPOSED SYSTEM

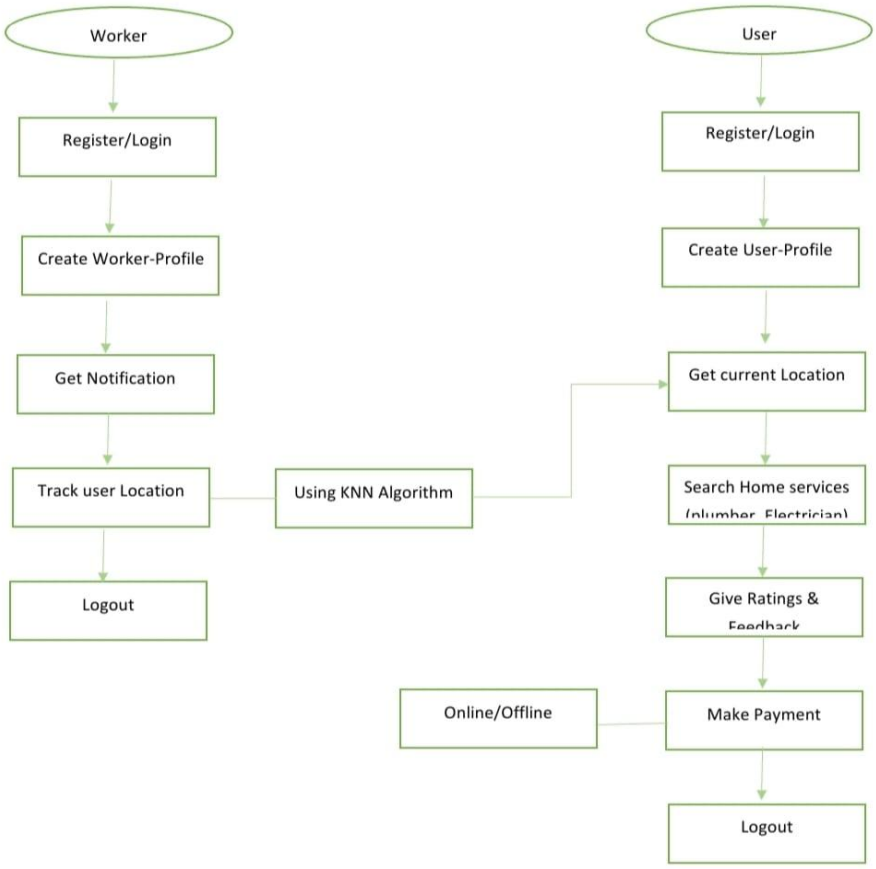

Fig:1. Home Services Recommendation System

In fig:1. The proposed system consists of a worker and a client, with the administrator having initial rights to access and modify the website. The user can register before the registration and login process, and the client can upload a file describing the services. After the registration process, the customer can proceed with the payment process and rate the customer service.[14] If the customer is not satisfied, they can proceed with the return policy process. The system also involves service providers who must go through the registration and login process, proceed with the uploaded files, and inform them to provide the service once confirmed. The system overcomes the existing drawbacks by implementing GPS services.[11]

VI. METHODOLOGY

6.1. Recommendation System Architecture

The architecture of a home services recommendation system typically consists of several interconnected modules:

- User Module: Allows users to create accounts, search for services, and book appointments.
- Service Provider Module: Allows service providers to register, list their services, and manage bookings.
- Recommendation Engine: Matches users with the most suitable service providers based on user preferences, location, and previous interactions.[8]
- GPS Tracking System: Monitors the real-time location of both users and service providers to facilitate better scheduling and coordination.
- Rating & Review System: Collects feedback from users to help improve recommendations and service quality.[7]

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VII. USE OF K-NEAREST NEIGHBORS (KNN) ALGORITHM IN RECOMMENDATION

7.1 Overview of kNN Algorithm

The k-Nearest Neighbors (kNN) algorithm is a non-parametric, instance-based learning method that is widely used for classification and regression tasks. In the context of recommendation systems, kNN can be employed to identify the most similar service providers based on factors such as service category, location, ratings, and user preferences.[6]

7.2 Application of kNN in Home Services

In a home services recommendation system, kNN can be used as follows:

Service Matching: When a user searches for a service, the system retrieves the k nearest neighbors (similar service providers) based on the features such as service category, location proximity, price, and previous ratings.

Personalized Recommendations: kNN can also consider user preferences and past booking history to deliver personalized recommendations.

VIII. GPS TRACKING SYSTEM

8.1 Role of GPS in Home Services

GPS tracking has become an essential feature for home services platforms, enabling real-time monitoring of both users and service providers. This functionality allows:

Efficient Scheduling: By knowing the real-time location of service providers, the system can suggest the nearest available serviceman to the user, reducing waiting time.

Route Optimization: GPS tracking can help optimize routes for service providers, ensuring timely arrival and completion of services.

Enhanced User Trust: Users can track the service provider's location, which increases transparency and builds trust.

8.2 Integration of GPS with kNN

The kNN algorithm can incorporate GPS data to recommend the closest service providers based on proximity. For example, when a user searches for a plumber, the system can identify nearby plumbers and recommend the best options based on location and other factors.

8.3 Challenges with GPS Tracking

Privacy Concerns: Continuous GPS tracking may raise privacy issues for both users and service providers.

Accuracy: The accuracy of location data can vary based on factors such as device quality and environmental conditions.

IX. CONCLUSION

This project proposes a novel on-demand home service application that provides a one-stop solution for various household needs, including cleaning, plumbing, electrical work, furniture maintenance, appliance repair, and more. The mobile-based platform connects users with qualified and background-checked professionals, allowing for convenient and efficient service delivery at the customer's doorstep. With features like GPS-enabled location tracking and real-time booking management, the system reduces the burden of finding an in-house solution and saves time for users. The platform also manages a database for tracking service requests, allowing for improved customer experience and service quality. By providing an online platform for local service providers, the system aims to boost the local market and increase revenue opportunities. With its user-friendly interface, the application revolutionizes the way household services are delivered, making it an essential tool for individuals and communities worldwide.

REFERENCES

[1] On demand home service application using machine learning-Er. Farida Attar1 ,Bushra Rizvi2 , Nafees Posharkar3 , Sana Shaikh4 , Zubiya Shaikh5

[2] House keeper recommendation system using machine learning-VaishnaviBhamare1 ,Pranjal Teli2 , Gauri Waykole3 , Rutika Bhalerao4 , Vaishali Khandave5

[3] Home services & utility system(IOS application)NareshMotwani,Ms. Nishtha Ahuja.

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[4] Mobile app for promotion of home services-David Israel, Josué Martin NicolásQuispe, José Luis Herrera Salazar.
[5] Prof.NareshThoutam, 2HrutikJaware,3Kunalzambare, 4Dhiraj Shelke, 5Swapnil Deshmukh
[6] SadhanaKodali, MadhaviDabbiru, B Thirumala Rao.
[7] On An Android Application for Home service-HegdeSharajBhaskar Shyamala1, Krishnamoorthy Rao2, Padmanabha Bhandarkar3, Prateek Prakash Vetekar4, Geetha Laxmi5
[8]Home service application [fixify] -Miss. PallaviShejwal*1, Rohit Mane*2, SahilThorat*3, Dipak More*4,GauravSuryawanshi*5
[9] Making Sense of the Urban Future: Recommendation Systems in Smart Cities-Dirk Ahlers, Patrick Driscoll, Erica Löfström, John Krogstie, and AnnemieWyckmans. 2016.
[10] Android solvotech: An android based mobile application to hire the professionals for repair job and maintenance-1Kundan Kumar Dubey, 2Ajitanshu Jha, 3Akshay Tiwari, 4D.Ganeshan
[11]Domestic android application for home services-SheetalBandekarDepartment of Master of Computer Applications KLS' Gogte Institute of TechnologyUdyambag, Belagavi – Karnataka Udyambag, Belagavi – Karnataka
[12]Private Bidding platform for home services-1Mrs. N. Kiranmai, 2Dr.Muntha Raju, 3Musini Narendar, 4Neela SaiKiran
[13]Professor .Yogita Deshmukh1, Saurabh Maske2, Bhuwaneshwari Deshmukh3, Ankit Mate4,Rajat Pakhale5, Saket Shahare6,Kushal Ghorse7
[14]MAZDOOR"- Online Application for Household Services-KunalBhalgat1 ,Sayali Desai1 , Rajeshri Mayanaikar1 , Aaditya Pardeshi1 , Prof.Bhagyashree Dhakulkar2