Connext: A Smart Platform for Connecting users with Local Service Providers

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*Abstract--*The way people find and get services has changed a lot because of platforms.. Some kinds of services like plumbing, electrical repair and carpentry are still not very organized especially in areas that are not as developed. People often have a time finding someone they can trust to do the job and local workers have a hard time getting noticed and finding new customers because they do not have a strong online presence. This paper is about CONNEXT, a platform that helps connect people who need services with people who provide them in their area. The platform is like a middleman that makes it easy for people to find services based on where they're what they need ask for services track how the work is going and give feedback when the job is done. At the time service providers can list what they do get notifications when someone wants to book them accept jobs and let people know how the work is going. CONNEXT also has a tool that helps the people in charge understand how the platform is working. This tool looks at what customers say about their experiences and how they behave when they book services. It helps figure out which customers are likely to come and use the platform again based on how they rate services what they say in reviews and whether the work gets done. The tool also scores service providers based on how they do their jobs how often they finish work on time and what people say about them. The platform uses rules and scoring systems instead of complicated computer models. This makes it easy for the people in charge to understand what is going on and make decisions without needing a lot of special equipment or data. The platform also creates maps that show where services are in demand and when people usually need them, which helps figure out which areas need more services and when. By making it easier for people to find and get services and by helping service providers get customers CONNEXT is making the whole system more organized, efficient and transparent. This is good, for both people who need services and people who provide them.

Keywords-- Hyperlocal Services, Customer Retention, Heuristic Algorithm, Weighted Scoring,Service Platforms, Demand Heatmap

I. INTRODUCTION

1. In cities and towns people need help with things like plumbing fixing issues, carpentry and appliance repair to live comfortably.. It is often hard to find someone you can trust to do these jobs. A lot of people ask friends or family for recommendations. This does not always mean the work will be good or that the person will be responsible.

2. Many small businesses that do these services work alone. Do not have a good way to tell people about what they do. This makes it hard for them to grow their business and get customers. It is also hard for customers to find good people to do the work while many skilled workers do not have work to do.

3. Now there are websites and apps that can help people find services in their area. These platforms let customers find people who can do the work they need see how good they are make appointments and tell others about their experience.

4. We are talking about the CONNEXT platform, which's a new way for customers and service providers to work together easily. This platform helps people find services, book appointments and give feedback all in one place. It uses where you are to find people who can do the work you need.

5. The CONNEXT platform also looks at what customers say about the services they get and the appointments they make. This helps the people in charge make sure customers are happy that the services are good and that the right services are available in each area.

6. By making it easier for customers and service providers to work together and by looking at how thingsre going the CONNEXT platform wants to make getting services in your area easier more open and better for everyone who uses it. CONNEXT is about making the CONNEXT platform a great tool for people to find the help they need with services, like plumbing, electrical repair and other household tasks, which is what CONNEXT is designed for.

II. PROBLEM STATEMENT

The service industry in our neighborhoods is really broken up into pieces and it does not have a good system in place for using computers and the internet in many areas. When people are looking for someone they can trust to do a job, like a plumber or a carpenter they often have a time finding them. They also have a time figuring out if they are good at their job or not. This makes it hard for people to know what they are getting into when they hire someone. They do not know what the job will cost or how long it will take.

On the hand small businesses that provide services like electricians and mechanics usually tell people about their business by word of mouth or by putting up ads in the neighborhood. These ways of getting the word out are not very good at helping them get customers or compete with bigger businesses that have websites.It is also hard to make sure that the people doing the jobs are doing work because there is no one place to keep track of everything. We cannot keep track of who finished a job or what the customer thought of the work. Without a way to get feedback from customers the people in charge and the service providers cannot see how they are doing or what they need to work on.

The CONNEXT platform is trying to fix these problems by making a website where customers can find service providers in their area. The system helps people find service providers, book appointments and leaves reviews so everyone can see how they are doing.

The CONNEXT platform also uses things like graphs and charts to help the people in charge make decisions. In the end the system is trying to make it easier for people to get services make sure the services are good and make customers happy. It is also trying to help the service providers, in the neighborhood by giving them a way to get their name out there and get more business.

III. SYSTEM ARCHITECTURE

Frontend Layer

The frontend layer is where customers, service providers and administrators interact with our platform. This layer handles user interactions. Sends requests to the backend services. Customers use the platform to• Register, Log in, Find nearby service providers by service and location, Request services and choose a time Track service status and get notifications, Rate and review services,Service providers use the interface to Add their services, Get booking requests from nearby customers, Accept or reject jobs, Update job status Administrators see a dashboard with system activity and insights like customer retention, provider performance and service demand.

Backend Layer

The backend layer is the core of the CONNEXT platform. It handles requests, matches services manages bookings and does analytics. When a user requests a service the backend matches them with providers. The request goes to providers who can accept it. After the service the backend collects ratings, reviews and job data. This data goes to the Analytics Engine for analysis.

The analytics engine uses algorithms to estimate: Customer Retention Score based on ratings, reviews and history Service Provider Performance Score based on ratings, job completion and reviews Demand Heatmap Data from service requests and booking times. The system uses simple algorithms for faster computation and easier understanding. The analytics engine sends results to the Admin Dashboard for display.

Database Layer

The database layer stores all platform data. This includes: User profiles, Service provider details, Booking and service requests, Ratings and reviews Location coordinates and booking times, This data helps the analytics engine. The database allows retrieval of historical data for analytics.

Analytics Engine Integration

The Analytics Engine is part of the backend layer. It processes platform data to generate insights, for administrators. The analytics engine does three tasks:

Customer Retention Analysis, Service Provider Performance Evaluation, Demand Heatmap Generation

These analytics outputs are shown in the dashboard to support decision-making.
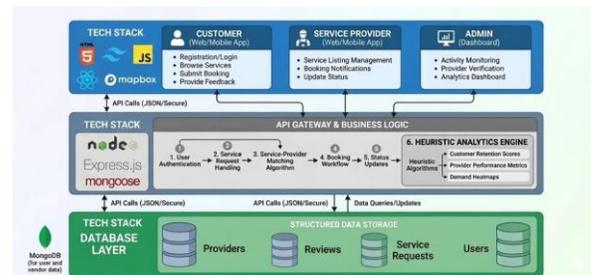

Fig 3.1 Architecture of Connext

IV. SYSTEM WORKFLOW

The CONNEXT platform has a way of doing things. It follows a set of steps to make sure that people can ask for services and give feedback easily. First a person signs up on the CONNEXT platform. Logs into their account if they already have one. When they sign up they have to give some information like their name, contact details and where they live. Next the person looks for service providers near them by choosing what kind of service they need, like a plumber, electrician or mechanic. The system then finds service providers who're near them and available to work. After finding a service provider the person asks for a service by saying what kind of service they need, when they want it and where they live. This request goes to service providers near them who do the kind of service they need.

When a service provider says yes to the request the system gives them the job. Updates the status. The service provider then does the work at the agreed time. When the work is done the service provider updates the status of the job in the system. Then the person who asked for the service is asked to give a rating and feedback about how it went. Finally the CONNEXT platform looks at all the ratings and reviews it gets. Uses special algorithms to understand what they mean. This helps the people in charge see things, like how likely customersre to come back how well service providers are doing and where the most services are needed so they can keep an eye on things.

V. System Modules

User Module

The User Module helps customers use the platform easily and request services quickly. Users can make accounts change their details and look for service providers by location and service type. Here is how it works. Customers can ask for a service see how the service is going and talk to the service provider if needed. After the service is done customers can rate it. Write a review. These ratings and reviews help the platform know how well it is doing.

Service Provider Module

The Service Provider Module is, for people who offer services like fixing things or cleaning. Providers can join the platform say what services they offer and tell when they are available. When customers ask for a service providers get a message. Can say yes or no. They also update the job status when they finish the service. This module keeps track of all services. Helps providers and customers talk to each other clearly.

Admin Module

The Admin Module helps administrators run the platform smoothly. Administrators check if service providers are real watch over bookings and solve any problems. They also make sure services are of quality. Moreover administrators can see charts that show how well the platform is doing including how many customers stay, how well providers do and where services are needed most.

VI. Data Attributes Used For Analytics

The CONNEXT analytics module uses data from what happens on the platform. This data is organized in a way that makes sense. The module uses a few pieces of information to figure out how well people come back how good the service providers are and when people usually ask for services.

User_ID is a number that identifies each customer who has signed up on the platform.

Provider_ID is a number that identifies each service provider and connects them to the services they offer.

Service_Type is the kind of service that the customer asks for like fixing a pipe or an electrical problem.

Rating is a score from 1 to 5 that customers give after they get a service.

Review_Text is what customers write about their experience with a service.

Location is where the service happens, with coordinates that show where it is on a map.

Time_Slot is when a service is scheduled to happen which helps figure out when people usually need services.

Completion_Status shows if a service was done or canceled.

All these pieces of information are used together to help the admin module do its job and make sense of the data from the CONNEXT platform. The CONNEXT analytics module relies on this data to work properly. The data, from the CONNEXT platform is very important for the analytics module to do its job.

VII. Customer Retention Analysis Using Heuristic Weighted Scoring

The CONNEXT platform is really good at keeping customers. This is important because it shows that customers like using the platform and will keep using it. When customers like the platform it means they are happy with the service and everything is working well.. When customers do not like the platform it means they are not happy and might stop using it. The CONNEXT platform has a tool that looks at how happy customers are. It does this by looking at what customers have said about the service in the past. Of using complicated computer models the tool uses a simple way of scoring that is easy to understand. This way of scoring is also good because it does not take a lot of computer power.

The tool looks at three things that affect how happy customers are: What rating the customer gives after using the service, What the customer says about the service in their review, If the service was completed successfully. Each of these things helps decide the score that shows how happy the customer is. The rating is the important because it shows how the customer really feels. The review helps us understand what the customer likes or does not like.. The service completion history shows if the service is working well. The score is calculated using a formula:

Customer Retention Score = (half of the rating score). A third of the review score). A fifth of the service completion score).After the score is calculated customers are put into groups based on how happy they're. This helps the people in charge understand how customers are feeling and find out who might need an experience. The groups are: High Retention: customers who're very happy, Medium Retention: customers who're somewhat happy, Low Retention: customers who are not very happy. Customers who are not very happy might be unhappy with the service so the people in charge can look at these cases and try to make the service better.

To calculate the Customer Retention Score we follow these steps: We get the customers rating, review and service completion history. We use these things to calculate the Customer Retention Category.

Step 1: We make sure the rating is on the scale as the other scores. The customers rating is usually between 1 and 5. We change it to a score between 0 and 1. This means we divide the rating by 5.

Step 2: We change the review into a score. We look at what the customer said in their review and decide if it is positive, neutral or negative. Then we give it a score. review = 1,Neutral review = 0.5 Negative review = 0.

Step 3: We calculate the service completion score. This score shows how many services were completed successfully. We calculate it by dividing the number of completed services by the number of services requested.

Step 4: We calculate the Customer Retention Score. We use the rating score, review score and service completion score to calculate the score.

Step 5: We put the customer into a retention category. We use the score to decide which category the customer is, in: High Retention, Medium Retention, Low Retention. This way of scoring helps the CONNEXT platform understand how happy customers are and find ways **to make the service better without using complicated computer models.**
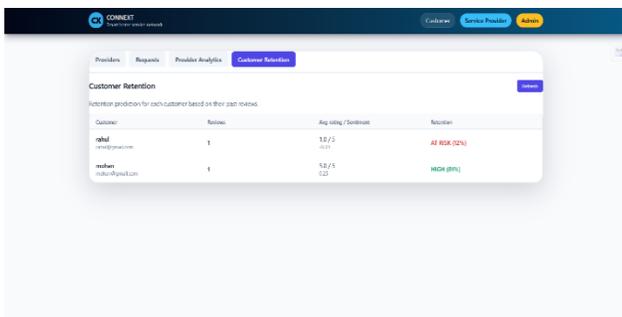
Fig 7.1 Customer Retention page on Admin Dashboard

VIII. SERVICE PROVIDER PERFORMANCE EVALUATION.

Maintaining service is essential for a hyperlocal service platform to be successful. The CONNEXT system has a way to evaluate how well service providers do their job. This is done by looking at how they have done in the past.The evaluation process looks at things to see how good the service providers are. The main things that are looked at are:

1.Average Rating: This is the average of all the ratings that customers have given for services that are completed.

2. Completion Rate: This is the number of services that the provider has completed compared to the number of services they accepted.

3. ReviewSentiment: This is what customers think of the service, based on what they have written in their reviews. These things are combined to give a score. The score is calculated by adding up the rating, completion rate and review sentiment. The formula for this is: Performance Score = (0.4 * Average Rating). 0.4 * Completion Rate). 0.2 * Review Sentiment).This score shows how reliable and good the service provider is. Service providers with scores are shown first to users when they search for services. This encourages providers to do a job and complete tasks on time.

Algorithm 2: Provider Performance Score Calculation

Input: Average Rating, Completion Rate, Review Sentiment

Output: Provider Performance Score and Ranking

Step 1: Calculate Average Rating

The average rating is found by adding up all the ratings and dividing by the number of completed services.Average Rating = Sum of Ratings / Number of Completed Services.This number is made to be between 0 and 1 so it can be compared to scores.

Step 2: Compute Completion Rate

The completion rate shows how reliable the service provider is. It is found by dividing the number of completed jobs by the number of jobs.Completion Rate = Completed Jobs / Accepted JobsA higher completion rate means the provider is more reliable.

Step 3: Determine Review Sentiment Score

The reviews that customers write are looked at to see what they think of the service. The reviews are given a score:reviews = 1,Okay reviews = 0.5,Bad reviews = 0

The average score is found by adding up all the review scores and dividing by the number of reviews.

Step 4: Compute Provider Performance Score

The rating, completion rate and review sentiment score are combined to give the final score. This is done using the formula: Performance Score = (0.4 * Average Rating). 0.4 * Completion Rate). 0.2 * Review Sentiment)

Step 5: Rank Service Providers

The service providers are ranked based on their scores. Providers with scores are shown first to users when they search for services. This helps customers find service providers and encourages providers to do a good job. The CONNEXT system helps customers find service providers. It also encourages service providers to do a job so they can be shown first to users. This way the CONNEXT system helps both customers and service providers. The service providers with scores are given more visibility in search results which means they are more likely to get hired again. This is a thing for everyone. The CONNEXT system is a way to make sure that service providers do a good job and that customers are happy, with the services they receive.
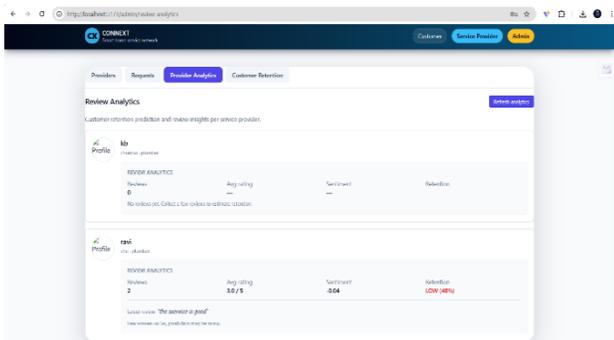

Fig 8.1 Provider Analytics page on Admin Dashboard

IX. DEMAND HEATMAP VISUALIZATION

To manage resources well we need to know where and when people are using services the most. The CONNEXT platform does this with demand heatmap visualization. The system looks at where people're when they book services. It then puts this information together to find areas where people are using services a lot. The results are shown on a map with colors, where areas with service use are darker.These maps help the people in charge see how services are being used in areas and at different times. For example people might need plumbing services more in the evenings in some neighborhoods and more during the day in business areas.By looking at these patterns the people in charge can tell service providers to work in areas where services are needed the most and to be available when people need them. This helps customers get services faster and makes the whole system work better.

X. ADVANTAGES

The CONNEXT platform has benefits for customers and service providers. It makes it easy for people to find local services by giving them one place to look book and review services. Local professionals can get customers and be seen more online. The people in charge can also use the platform to see how it is working and make sure it is running smoothly. The platform uses algorithms that do not need a lot of data or advanced computers. Also the demand heatmap visualization helps the people in charge plan resources better by showing them where and when services are needed the most. This helps them make sure customers are happy and services are available when needed.

XI. FUTURE WORK

The CONNEXT platform works well for managing services but there are some things that can be added to make it better. We can use computer techniques to suggest service providers to customers based on what they like and have used before. We can also make a system that schedules service providers automatically to minimize delays.. We can change prices based on how much services are needed. We can also use computer models to analyze customer reviews and see what customers really think about services.

XII. CONCLUSION

The CONNEXT platform is a way to connect customers with local service providers. It makes the system more transparent and efficient by putting everything in one place. The platform uses algorithms to help the people in charge see how customers are using services, how service providers are doing and where services are needed the most. The demand heatmap visualization also helps them make decisions by showing them where and when services are needed. Overall the CONNEXT platform makes the service marketplace more organized, accessible and based on data, which helps customers, service providers and the people, in charge.

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