

CLEANHOME : CONVENIENT SERVICE

Boyi Zhang,

Seidenberg School of Computer Science and Technology, Pace University

1 Pace Plaza, New York, NY 10038, USA

¹bz21819p@pace.edu

Abstract— This article introduces CleanHome - a convenient service platform. There are many service needs in the current market, but due to the inherent problems of traditional housekeeping services, such as difficulty in making appointments and quality assurance, it is difficult for users to obtain a satisfactory service experience. To solve this problem, we have developed a convenient service platform, which provides one-stop housekeeping services through mobile applications and websites, including household cleaning, machine repair, gardening and other services. Users can easily book and pay for services through the platform. And this platform also provides multiple service providers that allow users to compare and choose. The platform also provides a path for users to give feedback, and Cleanhome will continue to improve to provide users with better services.

Keywords— convenient service platform, one-stop, easily book and pay, multiple service providers, feedback.

I. INTRODUCTION

As the pressure of urban life continues to increase, more and more people need domestic services to reduce the burden of daily life. However, there are many problems in traditional housekeeping services, such as opaque services, difficulty in making appointments, and difficulty in guaranteeing service quality. In recent years, with the popularization of the Internet and mobile technology, housekeeping services based on network platforms have begun to rise, becoming a new choice for people looking for convenient and efficient housekeeping services.

This paper proposes a web-based convenient service platform, aiming to provide users with more efficient, transparent and professional housekeeping services. This platform uses mobile applications and websites as carriers to provide one-stop housekeeping services, including household cleaning, electrical repair, gardening and other services. Users can easily book and pay for services through the platform, and we also provide professional housekeeping service guarantee and

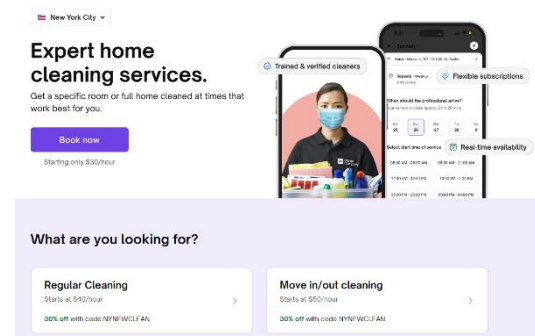
after-sales service. Moreover, the CleanHome platform promises that users can easily cancel or modify orders without charging any fees.

II. LITERATURE REVIEW

This section provides four similar apps and analyzes their main functions and modes.

A. Urban Company

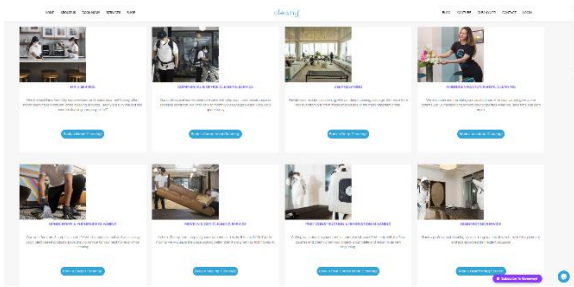
Urban Company is a web-based housekeeping service platform. This platform provides on-site housekeeping services. The main service provided is the cleaning of the room. And they are charged for hours, and some areas need to be charged separately, such as cabinets and bathrooms. This platform provides two service modes, one is regular cleaning, and the other is the move in/out cleaning. Except for cleaning, the platform does not provide other services.



B. Cleany NYC

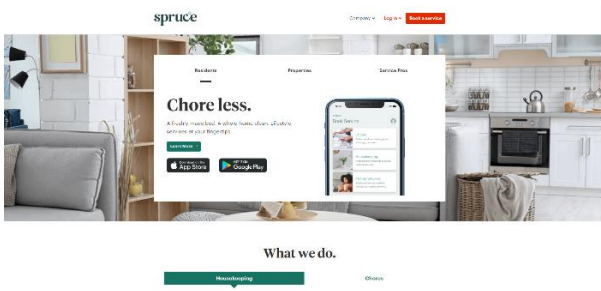
Cleany Nyc is a web-based housekeeping service platform. Its main target customers are people living in New York. It is very detailed in the division of service types. It includes Commercial & Office Cleaning Service, upholstered & Furniture Cleaning, Disinfecting Service, etc. The main interface of this platform is a brief introduction to this platform. If the user wants to make an appointment for the housekeeping service, the user needs to jump

multiple pages to find the appointment interface.



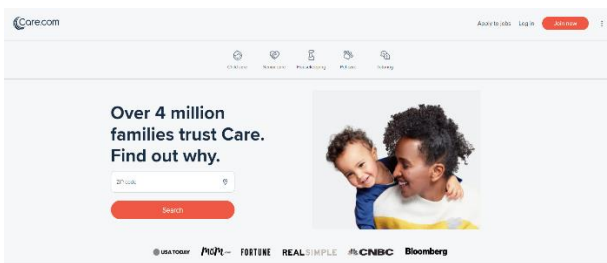
C. Spruce: Cleaning & Chores

Spruce: Cleaning & Chores is a mobile app. Its main service is housekeeping and chores. It has only three main interface Book Service, My Booking and Profile. This makes the APP look very concise and convenient for users. It has a very convenient time choice function and segmented the cleaning area. Users can choose to clean according to their needs, and they will not worry about waste.



D. Care.com

The Care.com APP has a mobile version and web version. Its service is very comprehensive. There are Child Care, Senior Care, PET CARE, Housekeeping, Special Needs and Tutoring. Its main function is housekeeping services and care for children and pets. And it shows the detailed information of the service provider in the APP. This solves the problem of trust in the field of housekeeping services. Users can make service booking based on the information of these service providers.



III. EVALUATION AND ANALYSIS

- A. In comparison to traditional housekeeping services, CleanHome offers several key advantages. The platform's one-stop shop approach provides users with a convenient and efficient way to book a wide range of services, while also offering the ability to compare and choose between multiple service providers. The platform's easy-to-use interface and streamlined booking and payment process also set it apart from traditional housekeeping services.
- B. In comparison to other network-based housekeeping platforms, CleanHome's emphasis on user feedback and continual improvement sets it apart. Our platform provides a dedicated feedback channel for users to share their experiences and suggestions, which allows us to continually improve the quality of our services.
- C. In the future, we plan to integrate more services, such as pet care and personal shopping, and expand our service coverage to more geographical areas. We also plan to automate and optimize the reservation and payment process to provide a more streamlined user experience.

IV. PROJECT REQUIREMENTS

A. Introduction

The aim of this project is to develop a web-based application that provides users with a convenient and efficient way of booking and paying for housekeeping services. The web app will be designed to meet the needs of modern urban life by offering a one-stop solution for all housekeeping needs of users. The project requirements are as follows:

B. Functionality

The web application should provide the following functionality:

1. Services Provided

The application should provide a wide range of housekeeping services, including household cleaning, electrical repair, gardening, and other services.

2. Booking and Payment

The application should allow users to easily book and pay for services through the website. Users should be able to select the service they need, choose a service provider, and confirm the booking. Payments should be made online through various payment options, including credit/debit cards, e-wallets, and other electronic payment methods.

3. Multiple Service Providers

The application should provide multiple service providers, allowing users to compare and choose the service provider that best suits their needs. This should ensure that users get quality services at competitive prices.

4. Feedback and Reviews

The application should provide a path for users to give feedback on the services received, which will help the platform to improve and provide better services to the users. Users should also be able to read reviews and ratings of service providers before making a booking.

5. Service Guarantee and After-sales Service

The application should promise to provide professional housekeeping service guarantees and after-sales services. If users are not satisfied with the services received, they should be able to contact the platform for a refund or a re-service.

C. Design and User Experience

The web application should be designed to provide a seamless and user-friendly experience. The application should be intuitive, easy to navigate, and aesthetically pleasing. The design should be optimized for desktop and mobile devices and should be responsive to different screen sizes.

D. Technical Requirements

The web application should meet the following technical requirements:

1. Browser Compatibility

The application should be compatible with all major web browsers, including Chrome, Firefox, Safari, and Edge.

2. Security

The application should use secure and encrypted connections for all data transfers and should comply with industry-standard security protocols.

3. Performance

The application should be optimized for fast and responsive performance, even in low-bandwidth environments.

4. Scalability

The application should be designed to handle a large number of users and service providers without compromising performance or stability.

E. Conclusion

In conclusion, the project requirements are aimed at developing a web-based application that provides a convenient and efficient way for users to book and pay for housekeeping services. The web app should provide a one-stop solution for all housekeeping needs of users, with a focus on quality, convenience, and user experience. The application should be compatible with all major web browsers and should meet industry-standard security protocols and performance requirements.

provider, service price, service time and other attributes. The order category also includes methods related to order status. Payment class: Payment class means that users pay service fees on the Cleanhome platform. Payment classes include payment ID, payment method, payment time and other attributes.

Feedback Class: Feedback Class represents the user's feedback on the service experience. Feedback class includes feedback ID, feedback content, feedback time and other attributes.

D. Use case Diagram

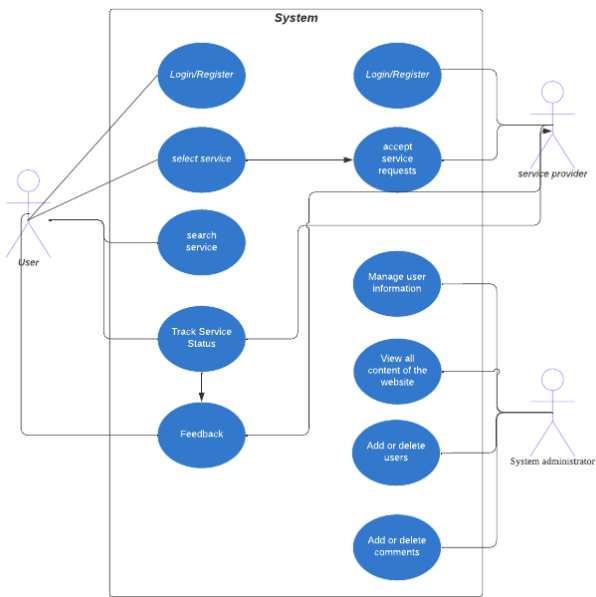


Figure 5.4 Use case Diagram

Figure 4.4 shows Use case Diagram. The Use case Diagram shows the relationship between users, service providers, system administrators and use cases related to Cleanhome.

VI. USER REVIEW ANALYSIS

In this study we used machine learning to analyze user reviews. The model of machine learning is sentiment analysis, which is a type of text model. Sentiment analysis is a powerful tool that can be used to analyze and understand customer feedback and opinions about a particular product or service. In the case of

Cleanhome, sentiment analysis could be used to analyze customer reviews and feedback about their cleaning services. By using sentiment analysis, Cleanhome could gain valuable insights into what customers like and dislike about their services, and use that information to improve their offerings. For example, if a significant number of customers consistently mention that they are unhappy with the quality of the cleaning, Cleanhome could use sentiment analysis to identify specific areas where they need to improve their service. They could then take steps to address those issues and improve the overall quality of their cleaning services.

The type we used in this study belongs to NLTK (Natural Language Toolkit). NLTK (Natural Language Toolkit) is a popular open-source platform that provides tools and resources for working with human language data in Python programming language. It offers a suite of libraries and programs for tasks such as tokenization, stemming, tagging, parsing, and machine learning for natural language processing (NLP). NLTK is widely used in academic research and industry applications, such as sentiment analysis, topic modeling, language translation, and speech recognition.

```

In [3]:
example = df['note'][1]
print(example)

<p>Very good service attitude. They wash clothes of different colors separately.</p>

In [4]:
tokens = nltk.word_tokenize(example)
tokens[:10]

Out[4]:
['<', 'p', '>', 'Very', 'good', 'service', 'attitude', '.', 'They', 'wash']

In [5]:
tagged = nltk.pos_tag(tokens)
tagged[:10]

Out[5]:
[('<', 'JJ'),
 ('p', 'NN'),
 ('>', 'JJ'),
 ('Very', 'RB'),
 ('good', 'JJ'),
 ('service', 'NN'),
 ('attitude', 'NN'),
 ('.', '.'),
 ('They', 'PRP'),
 ('wash', 'VBP')]

```

Figure 6.1 Text Splitting

In this model, the entire text is first split. It splits a sentence into individual words. Then classify each word. At the end of Figure 6.1, it shows the analysis for each individual word or

symbol. The symbols are RB, NN, etc. For these symbols, we need to compare the NLTK pos tag.

POS tag list:

CC coordinating conjunction
 CD cardinal digit
 DT determiner
 EX existential there (like: "there is" ... think of it like "there exists")
 FW foreign word
 IN preposition/subordinating conjunction
 JJ adjective 'big'
 JJR adjective, comparative 'bigger'
 JJS adjective, superlative 'biggest'
 LS list marker 1)
 MD modal could, will
 NN noun, singular 'desk'
 NNS noun plural 'desks'
 NNP proper noun, singular 'Harrison'
 NNPS proper noun, plural 'Americans'
 PDT predeterminer 'all the kids'
 POS possessive ending parent's
 PRP personal pronoun I, he, she
 PRP\$ possessive pronoun my, his, hers
 RB adverb very, silently,
 RBR adverb, comparative better
 RBS adverb, superlative best
 RP particle give up
 TO to go 'to' the store.
 UH interjection errrrrrrm
 VB verb, base form take
 VBD verb, past tense took
 VBG verb, gerund/present participle taking
 VBN verb, past participle taken
 VBP verb, sing. present, non-3d take
 VBZ verb, 3rd person sing. present takes
 WDT wh-determiner which
 WP wh-pronoun who, what
 WP\$ possessive wh-pronoun whose
 WRB wh-abverb where, when

Figure 6.2 NLTK pos tag

In this model, it scores each type of word and classifies whether the word is positive or negative. Combining these scores, the model will come up with a final result.

```
In [8]: sia.polarity_scores('I am so happy!')
```

```
Out[8]: {'neg': 0.0, 'neu': 0.318, 'pos': 0.682, 'compound': 0.6468}
```

```
In [9]: sia.polarity_scores('This is the worst thing ever.')
```

```
Out[9]: {'neg': 0.451, 'neu': 0.549, 'pos': 0.0, 'compound': -0.6249}
```

```
In [10]: sia.polarity_scores(example)
```

```
Out[10]: {'neg': 0.0, 'neu': 0.775, 'pos': 0.225, 'compound': 0.4484}
```

Figure 6.3 NLTK score

An example is given in Figure 6.3. The sentence "This is the worst thing ever." has a negative score of 0.451 in this model and a final total score of -0.6249. A final score greater than 0 in this model represents a positive evaluation. If the final score is less than 0, it represents a negative evaluation.

```
In [14]: ax = sns.barplot(data=vaders, x='uid', y='compound')
ax.set_title('Compound Score')
plt.show()
```

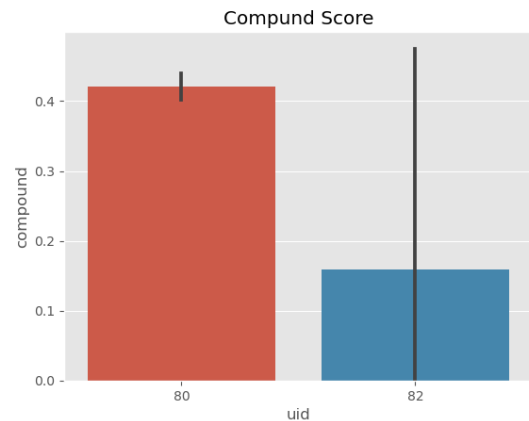


Figure 6.4 User Analysis

In the final stage of this model, we use the method of visual data to display the results, which is convenient for administrators to view. Figure 6.4 shows the overall feedback for each user.

```
In [15]: ax = sns.barplot(data=vaders, x='id', y='compound')
ax.set_title('Compound Score')
plt.show()
```

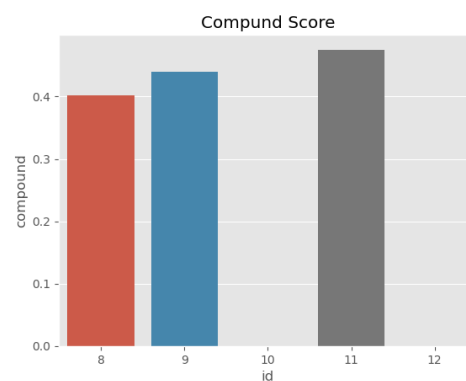


Figure 6.5 Review Analysis

Figure 6.5 shows the visual feedback for each review.

VII. CONCLUSION

In conclusion, CleanHome is a convenient service platform that provides one-stop housekeeping services for modern urban life. It offers a wide range of services, including household cleaning, electrical repair, gardening, and more. The platform's streamlined booking and payment process, easy-to-use interface, and multiple service providers make it a standout in the housekeeping services market.

CleanHome's dedication to user feedback and continual improvement also sets it apart from other network-based housekeeping platforms. In the future, CleanHome plans to expand its service coverage and automate and optimize the reservation and payment process to provide a more streamlined user experience.

VIII. SUMMARY

This article presents CleanHome, a convenient service platform designed to provide efficient, transparent, and professional housekeeping services. The platform uses mobile applications and websites to offer one-stop housekeeping services, including household cleaning, electrical repair, gardening, and other services. Users can easily book and pay for services through the platform, and it provides professional housekeeping service guarantees and after-sales service. The platform also promises users the ability to easily cancel or modify orders without charging any fees. The article compares CleanHome to traditional housekeeping services and other network-based housekeeping platforms, emphasizing CleanHome's advantages in providing a streamlined user experience and emphasizing user feedback and continual improvement. Finally, the article outlines the project requirements for developing the web-based application, including a wide range of services provided, booking and payment functionality, multiple service providers, user feedback channels, and automation and optimization of the reservation and payment process.

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