

# **Lodging Maintenance Feedback Classifier and Analyzer using Machine Learning and Natural Language Processing**

## **Problem**

After a customer visits a lodging/hotel, they can leave a rating and also write a review about the hotel based on their experience. Customers are free to leave both a positive or negative feedback. Some reviews have mixed reactions. Users leave many reviews and they contain issues that needs to be addressed by the hotel management. Based on a user review, if the hotel management can listen to the guest and make sure all the issues are fixed and addressed, the guests are going to be very happy the next time they visit. This shows that the hotel management cares about the customers.

But the problem is that most hotels have an issue of prioritizing and classifying these reviews and complaints. As a result, they fall behind on providing necessary solutions. This in return leads them to lose customers and build a bad reputation, which will hurt their business in the long term. If by any chance, there is some issue in the hotel; the management should be aware of it and take some action to solve it.

Moreover, most hotels can't allocate a dedicated person to check on all reviews as this is a tedious process as some hotels have a lot of customers coming in daily, which in return will result in many reviews. Therefore there is a big need for an automated system where a review can be understood and maintenance issues could be highlighted to the hotel management.

## **Solution**

Implementation of a web application for the hotel management to check hotel reviews and get the issues that needs attention will avoid the hotel management from missing out on crucial maintenance based issues left in hotel reviews. For any hotel that does not have a dedicated person to check reviews or check on maintenance based things constantly will find this system extremely useful. It will increase efficiency while saving a lot of time and hassle for the hotel management.

The web application can be used both by the guests and the hotel management.

**For guests** - (no sign up/login necessary)

1. Guests can write their review after entering the relevant hotel name to which they want to write the review and his/her full name which are mandatory fields.
2. Further, they also can search all the reviews made for a specific lodge/hotel by filtering based on the month selected by other guests as well.
3. If guests searches reviews from other hotel sites (ex:- from other websites such as booking.com, agoda, trip advisor, hotels.com), reviews made by other guests from those websites should display in our web application as well (optional).

**For hotel management** - Need to create an account as a member of the web application and after login: -

1. Management should be able to see all the reviews done by the people after searching by their hotel/lodge name within a specific month/time period selected.
2. Should be able to see all the issues listed down in the particular reviews accordingly which should only show the ***negative issues and should be classified deeply as*** Room related, Electricity related, Food related, Washroom related and Other. (this part is explained more in below example and screenshot)

---

---

like this for example: - a dummy review made by the guest to a particular hotel ( ex:- ABC hotel)

“The environment of the hotel was really cool. But when talking about the hotel in our room the table lamp was broken. The room is quite smelly as well and room-boys service was terrible. And there was only cold water in bathroom. There was also no enough space in luggage to keep our belongings. The price is a bit high when compared to other hotels in the area. But the Swimming pool is pretty large and I really like that. Huge parking space is also available which is really good. There were two issues which surprised me that could work to make the hotel perfect. One is that WIFI connection was weak sometimes. And the other is the food as its not tasty bad food. I don't expect to come back unless y'all correct this things which I experienced during my stay.”

\*\*\*negative comments highlighted in yellow in order to show which should be in the issue list when viewed by the hotel management.

---

so based on the above review given by the guest this is what hotel management should see which means that the issue list (which should contain only negative issues listed from the review made) should be shown as in the left. Further based on categories such as ( Room related, Electricity related, Food related, Washroom related and Other) the issues are further classified accordingly and the relevant issues belonging to those respective categories should be shown (right side).

## Issue List

1. table lamp broken
2. cold water bathroom
3. enough space store luggage belongings
4. price high
5. two issues surprised could worked make hotel perfect
6. wife connection weak
7. like service
8. bad hotel
9. smell room bad food
10. come back

## Room related

1. table lamp broken
2. enough space store luggage belongings
3. price high
4. two issues surprised could worked make hotel perfect
5. wife connection weak
6. like service
7. come back

## Electrical related

## Food related

## Washroom related

1. cold water bathroom

## Other

1. bad hotel
2. smell room bad food