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Zero Hunger Initiative

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Abstract - *A deeply disturbing fact about the world is that 690 million people are suffering from hunger everyday. The reason for their hunger is the lack of food they receive. On the other side we are wasting a lot of food in marriages, parties, hotels, public gatherings etc. A proper co-ordination can avoid waste of food and that food which is going to be wasted is delivered in place of scarcity of food. Food wastage is increasing and creating a negative effect on the economic growth factors. The food waste creates a impact on the agricultural processing industries. Restaurants are the major contributors towards food waste. This research has been proposed to predict how many future visitors will go to a restaurant using big data and supervised learning. The big data involved is restaurant historical reservations and restaurant information. We evaluate our approach using large-scale real world dataset from two restaurant booking websites. As food recycling is always remaining as a complex task, In this project, we are focusing mainly on the food wastage in the office premises, wedding, events, restaurants, etc. This web application is used to manage wastage foods in a useful way. In general, we are automating the process of the food wastage.*

Key Words: *Admin, Donor, Predict, Big Data, Donation, NGO, Automating.*

1. INTRODUCTION

Zero Hunger Initiative, is a platform wherein the Restaurants , canteens , caters, temples , etc which are left out with food , put an update on platform about the availability of the food and fill the details on the site for donation. There has to be a reduction in the no. of people affected by hunger today and it is possible by using various domains of technology. Tracking poor and hungry people in areas of high density becomes more important in order to provide them with the required food resource. Identification of food rich places or places where food is available in bulk help in gathering food for needy. This food then shall be delivered in areas of poverty by various food donating organizations and NGO's. This web application provides interface between food donor and the person who needs food. The food donor enter their food quantity details and addresses. The donor can create a account and whenever he is available with food, he can login and give request to the admin (NGO). The admin will collect the food from donor through their nearby agent then provide to nearest orphanages or poor people. After receiving the food, there is a alert message given to that donor. This project is food distribution and is an enormously successful social innovation that tackles wastage of food and poverty. The donor details are maintained confidential because it maintains a separate account for each donor. The restaurant owners need to accurately predict the number of future visitors. In this project, we propose an approach to predict how many future visitors will go to a restaurant using big data and supervised learning. The data involved for the purpose of prediction is restaurant information, historical visits and historical reservations. The dataset used to evaluate our approach are large-scale real world datasets from two restaurant booking websites.

2. LITERATURE SURVEY

The particular proposed system is Food For All is a mobile application developed with a need to make food available for the people in need with help of NGO and to avoid the wastage of food where food is wasted in bulk . In present scenario food is wasted daily on large basis in marriages, hotels, college canteens, events and many other social functions. Nowadays people mostly donate food manually by visiting various NGO, Donation centers around them. This is an application where the communication takes place over internet between food donors and volunteers from NGO to discuss the food availability and other necessary details.[1]

Suraya Masrom proposed the Food for You (F4U) mobile charity application has been developed with the intention to reduce the burden of impecunious peoples, who require food for living. The food waste problem can be solved simultaneously with the use of application. There are some few mobile charity applications, but none of them provides connections between the needful, donors and food suppliers to resolve the food waste problem. The paper is available with a features comparison study among many charity mobile applications, defining the restriction of the application.[2]

The proposed system is Food wastage is one of the major issues that need to draw the attention of society .there is a need proper planning to address this issue. Proper steps can manage its consequences. Waste food can be donated based upon its quality. The quality of the food matters a lot and hence, if the food is safe enough and of good quality then it can be accepted for donation to the NGO and the NGO will further donate it to hunger spots. If the food is of bad quality and not safe to consume then it will be given for the purpose of making compost. This particular android application will cover the gap between these stakeholders. [3]

The proposed system is to develop an android application that reduces the amount of food wastage produced in restaurants, functions and mess. The existing system only provides details about the amount of food wasted and doesn't provide an interface for donation and provide analysis of data. Using data analysis, to visualize the impact. Donating the excess food that consists of the following details, first, providing the location of where excess food is available &details of the food quantity available. Immediate Alerts to nearby NGO's, orphanage, volunteers to collect them.[4]

The proposed system is that the sharp increase in the amount of wastage in terms of food makes the need for charity in terms of donation. In today's world, large amount of food is being wasted on a regular basis in our homes, Hotels weddings and parties and many other places. A large no. people donate food, clothes and books etc. manually by vising different places on their own in 8 order to solve this crisis of hunger as well as food wastage in our country. So for the purpose of helping the donators, we developed a web-based application which will provide a platform for the people to donate their leftovers along with books and clothes, also the people who are in need of a meal will get something to fulfill their food requirements.[5]

The proposed application is android-based, generated using java and xml on Android Studio, which involves site association and will provide a platform for contributors and people in search after they have registered effectively on our app. The gifts page will then show the message as a note to various consumer. That particular message will now be located in the information base in the backend. The shelters who want to guarantee the gifts, can reply to the contributor and reach him/her when a note is received. [6]

3. PROPOSED SYSTEM

Zero Hunger Initiative is a website, where a civilian first informs that he is available with certain amount of food. As soon as, there is availability of food, a NGO volunteer is informed about same through NGO database and reaches place where food availability is there. The volunteer then collects the food from the person and does its quality check and delivers to a place where it is required. The place where food is delivered is marked as done when food requirement is satisfied and the process of delivery is carried on for other locations. The hotels too can donate if the food is being wasted. The project consists of three module :

3.1 Admin:

The main purpose is to manage all the requests on the platform . The admin will receive all the updates and can manage the all the necessary functionality on the site.

i. Dashboard: In the dashboard, the admin can manage and view the total no. state, total cities, total Food Donors, Listed Food, All Food Requests, New Food Request, Rejected Food Request and Completed Food Request.

ii. State: In this section, admin can manage state (Add/Update/Del).

iii. City: In this section, admin can manage city (Add/Update/Del).

iv. Reg Food Donor: In this section, admin can view registered food donor.

v. Listed Food: In this section, admin can view the listed food by food donor.

vi. Food Request: In this section, admin can view the request for food which is send user.

vii. Enquiry: In this section, admin can view and maintain the inquiry.

viii. Pages: In this section, admin can manage about us and contact us pages.

ix. Search Listed Food: In this section admin, search food request by request number.

x. Reports: In this section admin can view donated food and registered food donor in particular period

Admin can make changes in his profile, change and recover the password.

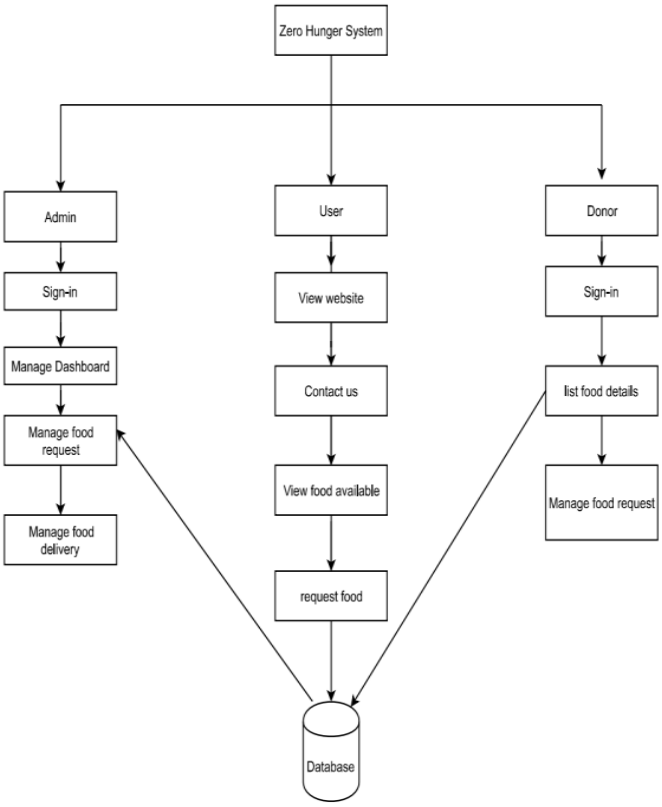

Fig 1: System Architecture Diagram

3.2 Donor:

These are the users who donate the food and update the food availability on the system.

i. Dashboard: In this section, donor can view total listed food and total food take away.
ii. List Your Food Detail: The food to be donated can be updated here.
iii. Request: In this section, donor can view the request which is send by user.
iv. Search: In this section, donor can search food request by request number.

Donor can also update his profile, change the password and recover the password.

3.3 Visited Users :

These are the visitors on website for the purpose of food ordering for the people in need.

i. Home: The User can visit the website and find the details he wants.
ii. About Us: The details of the website can be seen by the user.
iii. Contact Us: The contact details are available to the users and they can contact the website administrator.
iv. Food Available List: The food available after donation can be seen by the users.
v. Request Food: The request can be made for available food.

Restaurants:

The restaurants are provided with a great feature of prediction on the platform. In this the hotels can predict their future visitors. The Restaurants has are allocated a unique id. The user just have to enter the restaurant genre, restaurant id and the date of visit for which the prediction has to be done. The result obtained is the no. of visitors on that date. For achieving higher robustness, for XGBoost, we have set the learning rate of XGBoost as 0.2 and the subsample ratio of columns used for constructing each tree as 0.8. Instead of using 1 for the subsample ratios, using 0.8 can effectively avoid overfitting of the model on a small amount of noise in the training data

Evaluation Metric: We have made use of Root Mean Squared Logarithmic Error which is calculated as :

$$RMSLE = \sqrt{\frac{1}{n}\sum_{i=1}^{n}(log(p_i+1) - log(a_i+1))^2}$$

Where:

n is the total no. of observations

a_i is the number of actual visitors

p_i is visitors prediction

log(x) is the natural logarithm of x.

XGBRegressor: As it is a regression problem we used objective as reg: squared error. We used root mean squared error as the evaluation metric while training. The learning_rate was found out to be 0.01. On hyperparameter tuning, the min_child_weight was 0.8, 0.7 was the subsample ,colsample_bytree was found to be 0.5 & max_depth was 8. RMSLE score obtained for XGB Regressor is 0.45.

4. RESULTS AND DISCUSSION

Zero Hunger is a website for food donation and can be easily accessed by any user. The user can be any random person visiting the website for the purpose of food ordering to donate in a place where it is required. The donor available with food can fill details and donate his food with the help of the website. The restaurants can make use of the platform to know the number of visitors in the restaurant.

The page is designed in such a way that the user visiting the website is able to access all required functionality easily. The page spreads awareness among all individual visiting the website. The fig 2. shows the main homepage of the website.

Fig -2: Homepage

Any user visiting the website is free to contact the person concerned and clear his doubts if any. The user is made available with the available food list so that the food can be ordered on behalf of them for the person in need. Fig. 3 shows the page of available food list. The food list gets updated whenever a donor updates about the donation and the request is accepted by the admin.

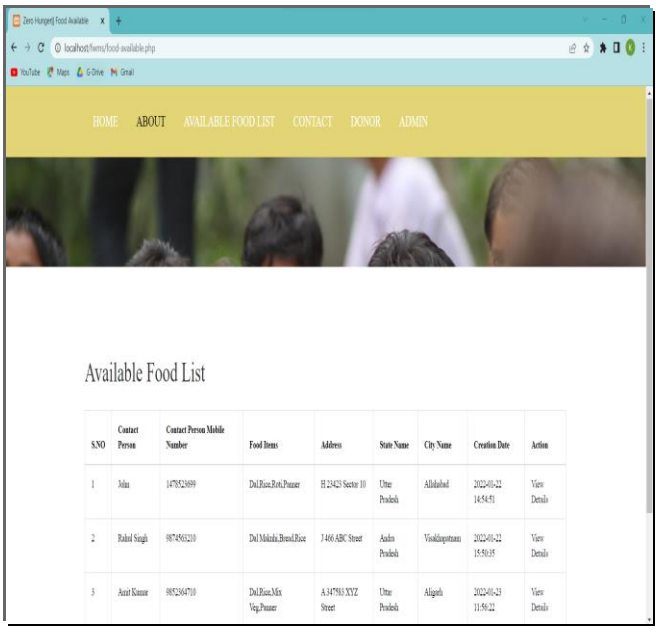

Fig -3: Available food list

The admin plays the most important role in the website and is responsible for all the all the activity taking place on the site. The admin gets all the updates about the food donation process and manage all the requests for the donation. Fig. 4 shows the admin panel on the website.

Fig -4: Admin panel

The donor has to register himself on the website. Whenever the donor is available with the food, has to first login to the portal and fill the details of donation. The donor is able to see whether the donation request is accepted or not on the platform. Fig. 5 shows the donor panel.

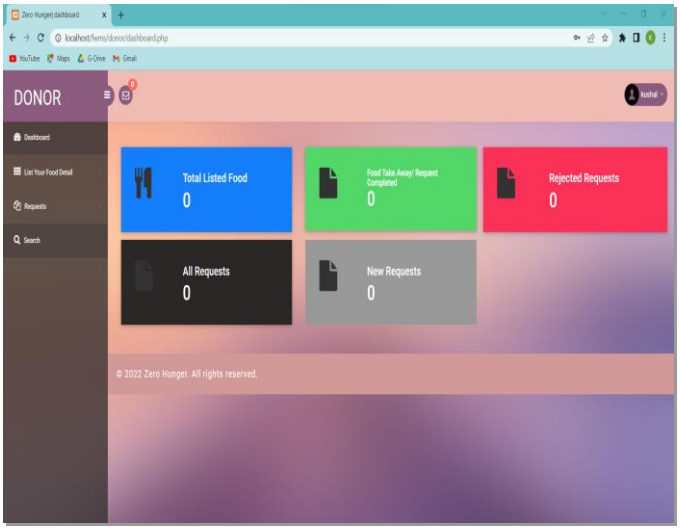

Fig -5: The Donor Panel

Datasets:

We selected two open large-scale real-world datasets from two restaurant booking websites: HOTPEPPER GOURMET [7] and AirREGI [8]. The two datasets contain the visitor and reservation history of 150 restaurants from year 2016 to the first season of 2017. For the purpose of prediction, users only need to collect restaurants big data, including restaurant information and historical reservations. We found out the strongest indicators of future visitors, they were time-related features and historical visitor records are most useful for the prediction. In addition, the unique restaurant ID and location of restaurant are also important features. This indicates that each individual restaurant follows some unique pattern, even if other factors are similar. By contrast, historical reservations can hardly help the prediction.

Prediction:

On Monday Holiday(March 20 2017)

Number of Visitors: 25

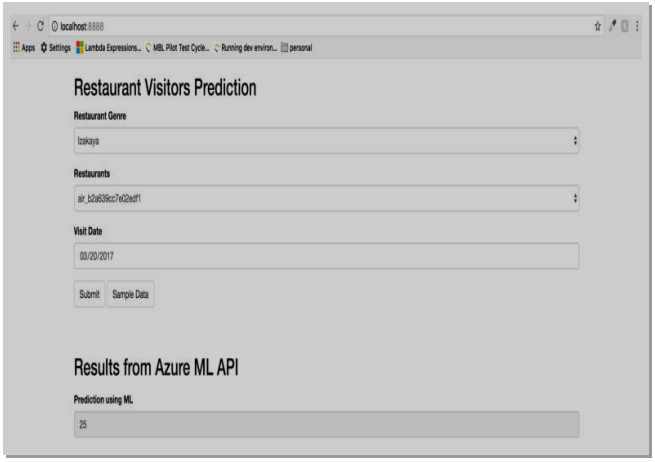

Fig -6: Holiday Visitors

On Tuesday Non Holiday (March 21 2017)

Number of Visitors: 6

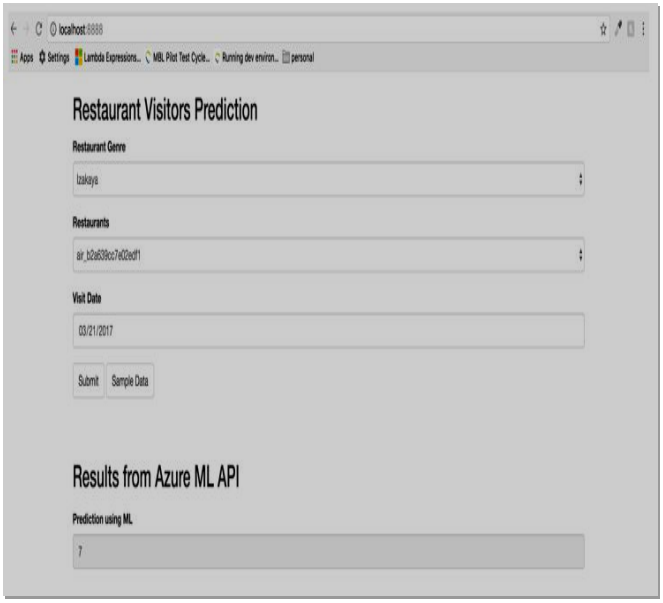

Fig -7: Non-Holiday Visitors

5. CONCLUSION

The excess food produced in functions gatherings can be easily donated. Visualization of the impact of donation has a positive impact on the users. An effort focused on feeding the hunger and minimizing food Wastage at the same time. An application which can used to donate or claim the excess food. Donating the excess food that provides the location of where excess food are available &details of the food quantity available and sends immediate alerts to nearby NGO's, orphanage, volunteers to collect them. It can be said that if this application will reach to all the people of India than it is going to bring joy in life of many people. This application can play a major role to help India become more developed in coming future by making all the citizen of India happy and prosperous.

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