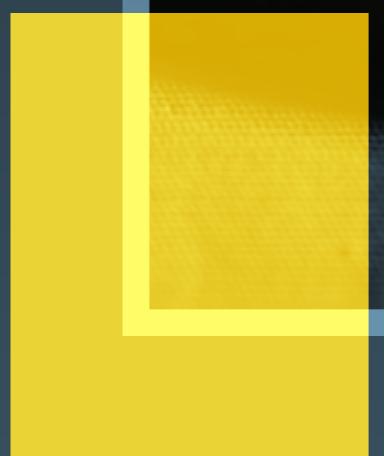
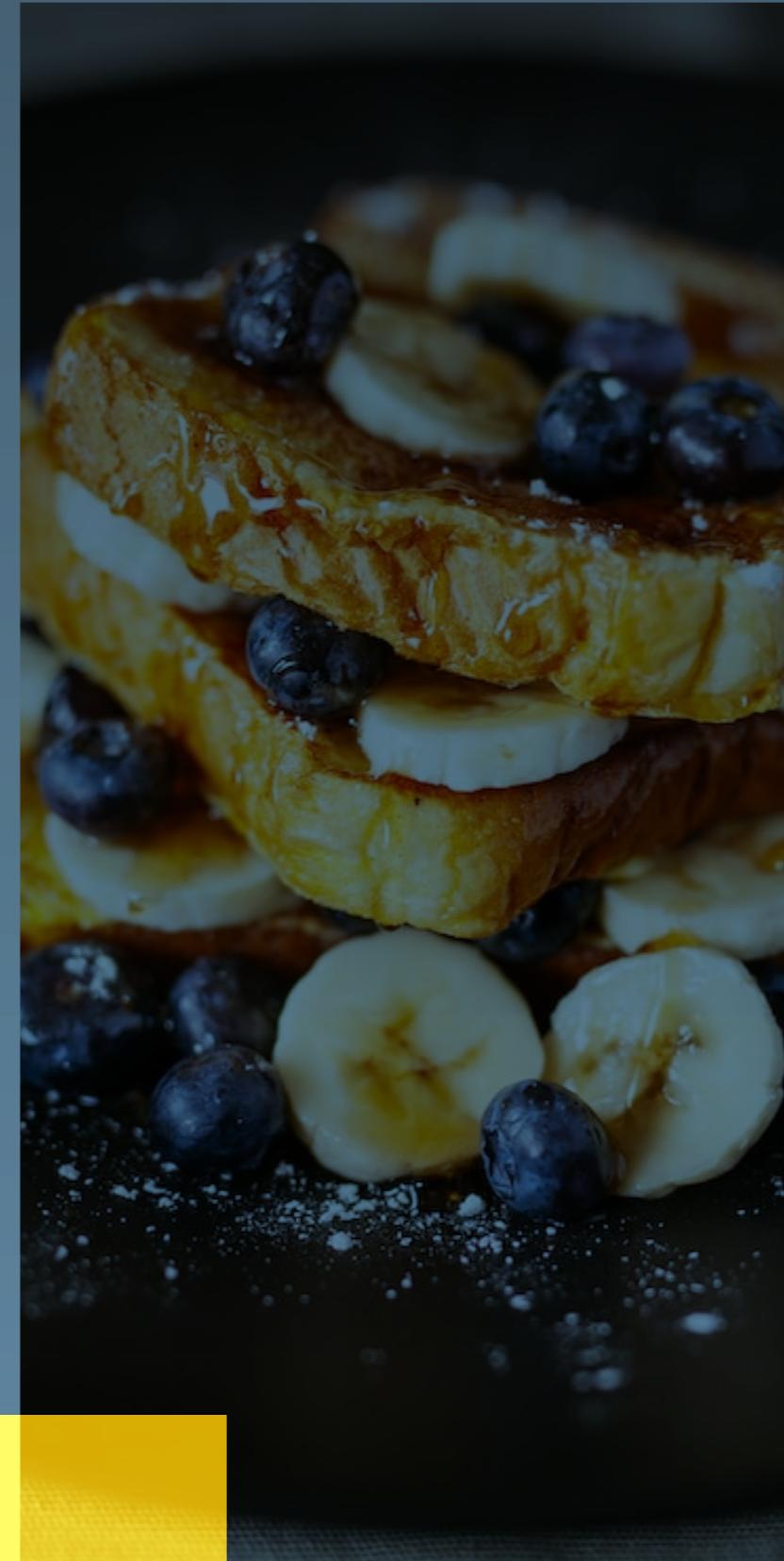


EATit



PROBLEM STATEMENT

40 percent of the cooked food is wasted at weddings, banquets, birthday and anniversary parties, etc. because it couldn't be delivered in time for dinner and delays in delivery lead to an uneatable condition. Usually, at parties, the leftover food is either thrown away or distributed very late to the needy(food in bad condition), which directly and indirectly leads to food wastage.

The left-over food is usually estimated after the whole event is completed, then the host searches for NGOs to serve the needy, then they come, pack the food, and take it, which is a long task due to which it not only exceeds the common dining time but also degrades the quality of the food (as those are prepared early). So there is a need to reduce this dining time gap and also serve good, hot food.

The major problems in this system is

- Throwing the leftover food (doesn't reach to the needy).
- Estimating left-over food at the end of the event.
- Locating and searching the right NGOs.
- Much delay in dining time of the needy(if served).



According to several surveys, India's estimated 10 million weddings a year contribute to food waste.

782 million people were affected by hunger globally.

Globally , 149.2 million children under 5 years of age were suffering from stunning hunger.

HOW FOOD IS WASTED ?



The cooked food which comes under major area of concern are the foods from weddings, restaurants, birthday parties or any kind of get together where a huge mass is involved

In an Indian wedding 40% of food is wasted which may sometimes reach upto 60% . According to a study , percentage of food wasted in a fast food restaurants is about 9.55% and in full service restaurant is 11.33%.

To manage the food waste we have came up with an idea which not only reduces the food waste but also feeds the needy.

OUR SOLUTION HIGHLIGHTS



Quick response

We don't have to wait till the end of the party to calculate & collect remaining food leading to the distribution of hot food during dining time.



Coordinates

It coordinates all 3 individuals - The host of the event, general customer and the NGOs where food is to be distributed.



Technology use

We use deep learning method which can predict the peak hours, the maximum strength etc which help to distribute the food in time which reduces food wastage.



Reduce food loss

By the help of our app and sensor majority of the food can be saved and distributed to the needy in time.



OUR SOLUTION



To reduce the dining time gap, maintain food quality, and serve the left-over food to all needy people, we developed an integrated system that contains an IR sensor to calculate the number of incoming people, linked with an app that uses deep learning to predict in real-time the amount of food that will be left after the end of the event. This is a dynamic parallel operation system that estimates the leftover food in much less time.

HARDWARE SYSTEM

It consists of an IR (infrared) sensor to count the number of people entering the hall, a WiFi module to link the calculated data to the IP address of the system, and an Uno Arduino to integrate the sensor and module for its operation. This is also used to calculate the number of people entering and exiting the venue hall. This small hardware system is to be fixed at the entrance door of the hall. The counted data received by the hardware is sent to the IP address for further software processing.

OUR SOLUTION



SOFTWARE SYSTEM

The collected data from the hardware system is now trained through a deep learning platform (Tensorflow, Keras, and Pytorch).

The deep learning platform analyses and provides the amount of food that will be left at the end of the event at the specified time. This information is presented to the event host, NGOs, or venue owner through an app.

Now the NGOs can request takeout from nearby venues, and the host can notify the nearby NGOs about the availability of food at the event for take away. Now the NGOs can collect hot and fresh food within the normal dining time to serve the needy.

By our solution, we are now able to serve good quality food to the needy in time, reduce food wastage, and also help in the social upliftment of our country.

ML MODEL



- Our ml model predicts the time snap at which the number of persons are maximum i.e,peak time by using logistic regression.
- The ml model predicts the amount of food left at the peak time,thereby decreasing the time gap between cooking and delivery of food to the needy.
- To calculate this we have used KNN,SVM,decision tree,random forest,naive byes and gradient boosting.
- We also imported data sets of various venues and came to know that the occupancy of a venue depends upon humidity,light,CO2 and heat map.
- By these datasets we can also analyse the number of occupied persons and vacant persons before the event is started.

CALCULATION

Let ,

Number of people estimated to surely come=x

Number of people buffer=y

Total food made in terms of number of people who can consume it=z

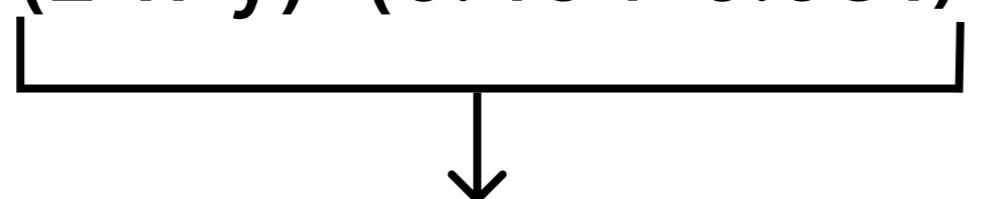
As per 1 pound rule,

average consumption of food by Indians in weddings is 1-1.5 pound

$$= (1-1.5) * 0.454 \text{ kg}$$

$$= (0.454 - 0.681) \text{ kg}$$

Hence, total food left = $(z-x-y) * (0.454 - 0.681)$



This is the amount of food that
can be served to needy

CALCULATION

Average Consumption of human normally = (0.5 - 1)kg

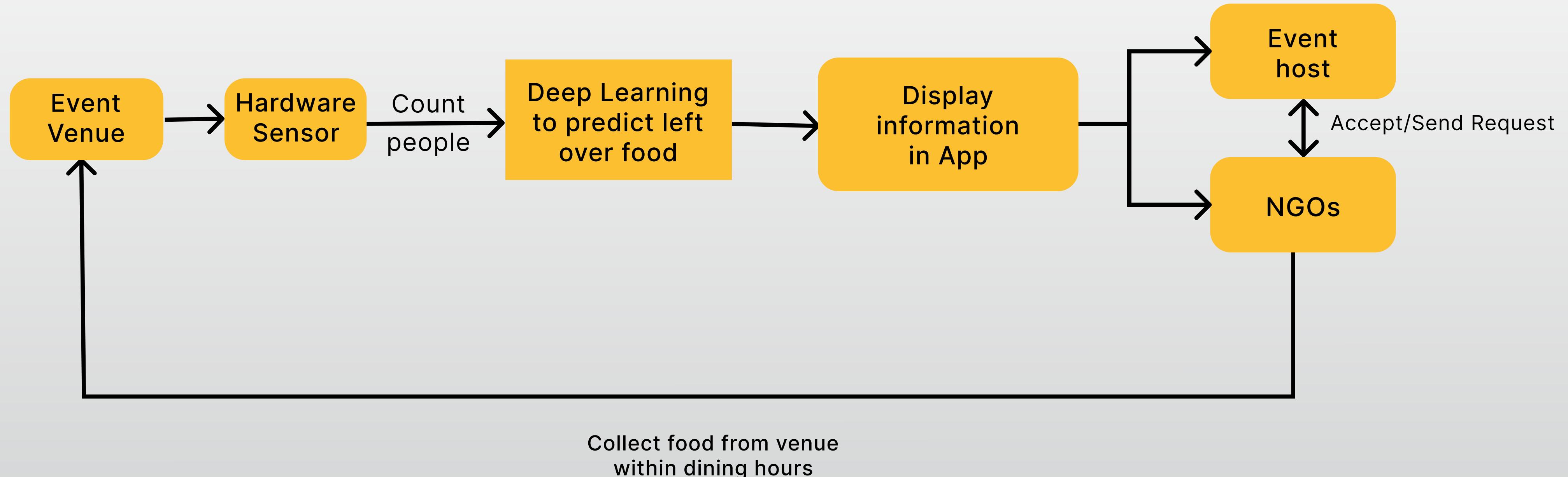
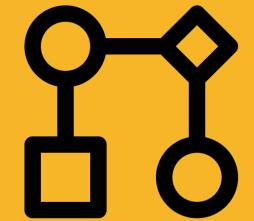
Number of needy people can be served = Avg consumption at indian wedding

Avg consumption of human normally

= 1 : 2

Hence a single plate of a wedding can be served to 2-3 needy people.

WORKFLOW



FUTURE EXPANSIONS & STARTUP SCOPE



- In this model we used IR sensors to count people as it will be cost effective but for further expansion and improvement we can use Picam model to get more accurate results.
- This model can be shaped further as an start up idea where the common people can order food from the parties which also reduce the dependency on the NGOs for the distribution
- By including the common people as customer monetary model can also be established which will help for smooth functioning of the overall process and supporting NGOs for social upliftment.



TENSORFLOW

To create a graph neural network



PYTORCH

Identification of motion direction



KERAS

To productize the Deep learning model on Smart phone



JUPYTER

IDE to perform the Deep learning & ML programing



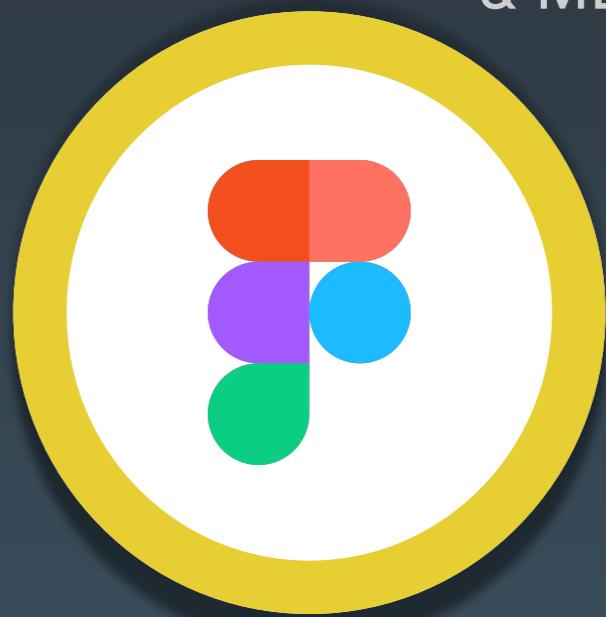
FLUTTER

To develop the app



ARDUINO

To code the hardware sensor operation



FIGMA

To develop the UI of the App

THANK YOU



Abinash Mahapatra
EE 3rd Year



Sribidya Moushumi Mishra
EE 3rd Year



Shubhranshu Mishra
EE 3rd Year



Sonali Mishra
EE 3rd Year