Know-Wait

Team Avocado
The Problem

- Many people have limited time to get food in their busy schedule and have no way to know how long they will be waiting for fast food.
Customer Base

We will be using ODU as a test case for our prototype

Customers
- Students and Faculty
- Made for Android phones

Fast Food Services
- Panda Express
- Subway
- Chick-fil-a
- Starbucks
Problem Characteristics

- Lines for Panda Express and Subway, for example, can reach 30 people or more
- The wait can be up to 30-45 minutes long
- Between certain times the lines can go from non-existent to packed in a matter of minutes
- If a chain runs out of a certain food, the line will slow down causing a longer wait.
Problem Process Flow

Students/staff is looking for food

They choose between the Webb center or Broderick for food

They are lucky and the lines are short
Or
They are unlucky and the lines are long

The customer leaves happy and is on time to their next event
Or
The customer leaves unhappy and hungry
Solution Goals- Physical set up

- Using a camera and Raspberry Pi we will take images of the line to get data on how long the line is
- The camera will have an overhead view of the line to get the full picture
Background subtraction removes unwanted elements from the video feed.

Produces “silhouettes” of new elements (people) in the image.

Silhouette movement is tracked and wait time estimate is calculated.

The program only stores images for comparison and deleted afterwards.
Solution Process Flow

- Students/Staff are looking for food.
- They don’t know if they should choose between the Webb center or Broderick for food.
- They open up the know wait app and are given the wait times at all the food chains.
- They are short for time and choose where to go based on the wait times.
- The customer leaves happy and is on time to their next event.
**Major Functional Component**

- **User**
  - Students and Faculty
  - Access the Mobile Application

- **Mobile Application**
  - Provides users with content

- **Server**
  - Sends data to user

- **Camera/Pi**
  - Collects data
  - Sends data to server
Benefits to the Users:

User:
- User will have the knowledge of how long the wait will be at multiple food spots
- Users will have the convenience to access the app anywhere and anytime
- Users will get wait time for food chains near by

Food Chain
- Participating food chains will have more customers migrate to their restaurant during their slow periods
## Competition Matrix

<table>
<thead>
<tr>
<th>Competitors</th>
<th>Live constant data</th>
<th>Mobile Application</th>
<th>Fast food services</th>
<th>Video base data collection</th>
<th>Show Food Chain Menu</th>
<th>Give average time</th>
<th>Reserve tables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Know-Wait</td>
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What does Know-Wait do?

- It gives the user estimated time to wait in line.
- The application updates the estimated wait in real time.
- The application will give list of restaurant in that area with the wait time.
What does Know-Wait not do?

- It does not give you a normal average time base on past data
- Does not reserve tables or meals for people
- User can not use to pay for food
- The user cannot see the video feed
- User can not see the food services menu
Conclusions

Know-wait will help busy customers get food in a reasonable amount of time by allowing them to know how long their wait will be.
Reference

- Camera picture: [https://openclipart.org/tags/CCTV](https://openclipart.org/tags/CCTV)
- Info on Google popular times: [https://support.google.com/business/answer/6263531?hl=en](https://support.google.com/business/answer/6263531?hl=en)
Questions?