

Combating Waste: A Mobile App for Food Donation

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Abstract

About 815 million people in the world suffer from chronic undernourishment. Paradoxically, 1.3 billion tonnes of food is wasted each year. When food surpluses occur, the best destination — which ensures the highest value use of edible food resources — is to redistribute these for human consumption. In this vein, we propose the *Combating Waste* app to fight food waste by establishing a donation network. To this end, volunteers cooperate as food donors or transporters, and charitable organizations join as food receivers and also transporters. The application searches for compatible donations and demands, generating rides that connect them. Transporters can choose a ride of their preference and take the donated food to its destination. We aim at connecting persons with food surplus to places in need of food.

Key words:

food donation, food waste, mobile application

Introduction

According to the Food and Agriculture Organization of the United Nations (FAO), the direct economic consequences of food wastage (excluding fish and seafood) run to the tune of \$680 billion in industrialized countries and \$310 billion in developing countries [1].

Although existing solutions seek to reduce the waste of food [2, 3, 4], they are more suitable to countries where people feel safe to provide their addresses to a stranger or to go to an unknown person's address to collect food. In Brazil, food donation can be done through direct contacting charitable organizations or through food banks.

We introduce the Combating Waste app, which is based on a donation network that searches for compatible donations and demands, generating rides that link them. When compared to other food donation apps, our approach is specially designed to Brazilian reality: it provides more safety for the users; it focuses on delivering food to people in need; anyone can contribute, even persons who have nothing to donate can help taking the donation rides.

Results and Discussion

The Combating Waste app allows persons, restaurants, retailers, industries, and producers to register as food donors, and enables charitable organizations to register as food receivers. Instead of individuals sharing food, the volunteer work does not rely only on donation: different entities can be food donors but also can help to transport food from a food donor location to a charitable organization. On the one hand, a volunteer offers food to donate. On the other, a charitable organization reports specific food demands. As an intermediary, a transporter volunteer will perform the process of collecting the food donation and taking it to a charitable organization. The main idea of the app is to facilitate the connection among food donors, transport volunteers and charitable organizations, creating a food donation network.

The features included in our mobile application were based on visits to organizations that would fit as food donation receivers: Mesa Brasil and GACC. This also allowed us to know the activities developed around them as well as their target audience.

The app stores the necessary information about its users

and about the food specified in both donation and demand settings. It also creates rides based on our ride composition algorithm to assist the transporters. Image 1 shows examples of the Combating Waste app screens.

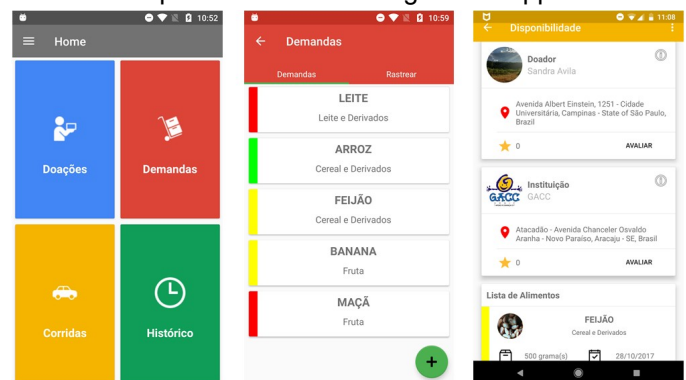


Image 1. Example of the Combating Waste app screens. The app is currently only in Portuguese. (left) The main app screen. (middle) List of demands (from a charitable institution point of view). (right) Ride details screen (from a transporter point of view).

Conclusions

Our app creates a food donation network that connects not only places with food surplus to places where food is needed, but people as well. It also helps to increase visibility of charitable organizations and their missions. As future work, regarding security matters, we will include a method to confirm the identity of the users participating in a ride, e.g. a code that is visible only to the users that share a specific ride.

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¹ Food and Agriculture Organization, "Food wastage footprints: Impacts on natural resources," Food and Agriculture Organization of the United Nations, *Tech. Rep.*, 2013.

² NoFoodWasted (accessed July 2018). www.nofoodwasted.com

³ comidainvisível (accessed July 2018). comidainvisivel.com.br

⁴ Too Good to Go (accessed July 2018). toogoodtogo.co.uk