UC Davis ECS 36B Final Project Proposal

Term: 2020 Fall

Professor: Felix Wu

Topic: Smart Fridge and Grocery Networking

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1. Introduction

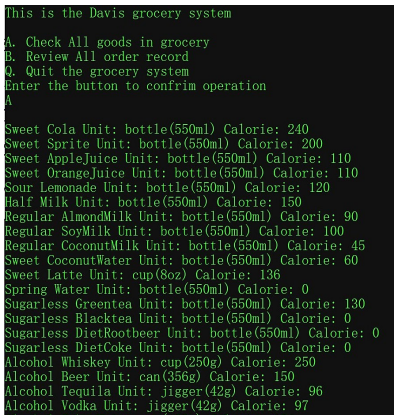
For the final project, we have decided to pursue designing the foundations of a smart food networking application. Among the different topics, this topic is the most interesting, since it is a computer solution that has not been commercialized till this day. Although companies like Samsung and Philips have developed smart fridges, with computer control systems integrated within the fridge. The world has not yet seen a fully automated food ordering and consumption system. It is a system where a smart fridge, perhaps a network of fridges, can communicate with the user and a network of grocery stores to make food orders, diet recommendations for the user, and make consuming health food easier for everyone.

2. Structure of Program

In the smart fridge networking, we will have three parts: Application, Smart Fridge, and Grocery. Users can send commands(i.e. getting some foods, ordering foods) to the fridge through Application, while smart fridge can decide whether approve the request from user by smart calculation and analysis of user's daily diet. Smart fridge will also automatically interact with Grocery to import some foods and make sure user have a healthy diet.

Demo for Application UI

Smart Fridge



Function of Grocery System

3. Functionality

3.1 Improving health through recommending and monitoring food consumption

This final project presents a very important goal, that is, a way to improve the user's health. This smart fridge network will monitor the user's food consumption pattern, make the recommended diet suggestions and in turn ensure that the user has a healthy diet. The smart fridge will make the necessary interventions, if for example, the alcoholic consumption rate is high. In this case, the smart fridge will intervene and limit alcohol consumption through denying a request from user to pick up alcohol drink in the fridge. The smart fridge network also has some preventive measures as well, for example, it will prevent the consumption of alcohol for any user that is under the age of 21. Based on the BMI of user, smart fridge will set different intake limit for user which can make sure they keep a health diet. This includes the total calorie intake per day and limitation on the maximum daily intake of specific foods. At the end of the day, smart fridge will send a message to user and give some statistics of user's intake, this includes total calories intakes, and intake data for carbohydrates, protein, fat. We hope user can reflect on this short report and understand how to develop a healthy diet.

3.2 Ordering food from grocery stores has never been easier

The smart food network makes it a lot easier for users that have busy schedules throughout the day, to order food using the smart food network. It also enables the user to order food that might not be available at the local grocery store, allowing the user to order food from any grocery store across the user's home city. Therefore, saving the daily trip to the grocery store for some work or for the user to enjoy some free time.

3.3 Exploring new foods and importing favorite food of user

Smart Fridge will analysis the daily diet and find the favorite foods of user. At the end of every day, smart fridge will automatically import user's favorite food from grocery. Also, it will import one drink, one veggies or fruit, one snack, and one serving of meat from grocery and hope user can explore these new foods. It will be a good way to develop the diversity of user's daily diet and hope user can enjoy the process of exploring new foods.

3.4 A smart fridge, a smart business model

The business model for the smart fridge makes it affordable for both the user and the grocery store. This is because the user client application is free to install – the user will only have to pay for installing the actual smart fridge in the kitchen. The grocery store on the other hand, will only have to pay some higher costs for installing and maintaining the grocery server (cloud servers might be cheaper for most grocery stores). Most of the profit should come from advertising certain products as well as

making recommendations to international food companies on the success of their products in terms of consumption rates, through the data collected by the smart fridge. This data will also help the grocery store chose the products that are popular among customers, perhaps encouraging the store to make certain promotions on food products as well. Furthermore, the data collected on the users, make it as such, that information on the users are anonymous and private. This makes the smart food network an ethical and a promising solution, that can change the food industry.