Bilkent University
Department of Computer Engineering

Senior Design Project

Diner

Project Specification Report

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1.Introduction

There are a lot of people who have issues with their health and weight. In 2016, %39 of the world adult population were overweight and 13% of the adult population in the world were obese [1]. These people experience significant difficulties with controlling and following their diets, and these problems are magnified when eating outside in restaurants. They either cannot find anything to eat that would be appropriate for their diet, or have to deal with looking up every item on the menu to decide what to eat. Furthermore, this problem is not just limited to those with health problems, but anyone who has to keep a relatively strict diet, such as those who exercise regularly.

Diner is designed to help with this problem. It provides menu options to people according to their diet, based on the available options in the menus of restaurants nearby. It is especially designed towards areas with multiple places to eat such as malls, but it will work for relatively any situation where there is a menu to choose from. Even if the restaurant has not submitted their menu, users can scan the menu with the camera on their phone and the app will find the average nutritional values of the menu items and make suggestions based on these values.

1.1 Description

Diner will be a mobile application with a website counterpart that will help people with finding suitable food based on their diet. It will be available for the use of anyone with a smartphone. People will be able to enter their daily nutritional allowances, and their doctor or dietitian can also enter their diet in the system when the user gives them authorization. The app will scan nearby restaurants based on the user's current location on the map, make calculations based on the nutritional values of available menu items and make suggestions. The user will also be able to manually choose the location or restaurant where they wish to eat. Restaurants will have an interface where they will register their menus and nutritional tables to the database. The app will also be able to find average values for items that do not have a registered nutritional value available on the database using external sources such as

the databases from other diet tracking apps or official organizations (e.g. MyFitnessPal, USDA Food Composition Database) [2] [3].

1.2 Constraints

1.2.1 Implementation Constraints

- The application will be a mobile application with its web counterpart.
- Github will be used for version control.
- The application will be implemented mainly on Android and a website, with plans to also implement it on iOS based on the development process.
- For Android application Java will be used, for iOS swift will be used and for web both HTML, CSS, JavaScript and PHP will be used for implementation.

1.2.2 Economic Constraints

- The application will not charge users, restaurants or dieticians for its service.
- The application will need a server for both database solutions and logic solutions.
- The application will show ads to users.
- The application will collect and sell anonymous data about the eating patterns of users in specific areas for expenses and income.

1.2.3 Ethical Constraints

- Data collected and shared with 3rd parties will be anonymous.

1.2.4 Time Constraints

- The development has to be completed before December 16, 2019.

1.3 Professional and Ethical Issues

Although the collected data will be fully anonymous, the collection of this data still might pose an ethical issue. Maximum care must be taken to ensure the privacy of users as much as possible.

Since this app is not actually a dieting app, there are not any ethical or professional issues related to the implementation. The app only makes calculations and suggestions

based on the data provided by the users and restaurants, and does not claim to give any medical advice as to what the users' diets should consist of.

2. Requirements

2.1 Functional Requirements

- The system should hold users, restaurants and dieticians data.
- System should limit prices according to user wish.
- System should ask authentication from user on log in and from dietician while pairing.
- System should provide search and matching tools to search from foods using the system.
- System should read a menu as a text from users phone camera and interpret elements possible nutritional values.
- The system should allow users to rate and give a written feedback to restaurants.
- The system should allow users to communicate with restaurants and their dieticians via using built-in messaging system.
- The system should allow dieticians to track his/her meals for further recommendations if that user allow his/her dietician to.
- Restaurants, hotels or other meal servicing corporations should be able to update their menus.
- System should have a system for restaurant authentication.
- Users should add their alerjetic nutrients or unwanted ingredients in their blacklist to avoid them.
- Users should select a location or use their current location to request a meal menu using Google Maps API.

2.2 Non-Functional Requirements

2.2.1 Usability

- The interface should be user-friendly, simple and straightforward.
- The user interface should be intractable.
- Internet connection is required for using the application yet user can pre request a menu from a location to use later.

2.2.2 Performance

- The meal selection algorithm should be fast and efficient in order to give suitable menus to multiple users.

2.2.3 Extensibility

- The system should allow addition of future feature developments and should be up to date for each new Android and iOS version .
- Number of servers should be easily increasible.

2.2.4 Reliability

- Menus should be precise with users required macronutrients and preferences.

2.2.5 Compatibility

- The mobile application must be compatible with the most of the android phones in the market and iOS devices and web browsers.

2.2.6 Security

- User data should not be exploitable.

3. References

[1] “Obesity and Overweight”, World Health Organization, 16-February-2018. [Online] Available: https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight [Accessed: 22-February-2019]

[2]“MyFitnessPal Developer Portal”, MyFitnessPal, [Online] Available: https://www.myfitnesspal.com/api [Accessed: 22-February-2019]

[3] “USDA Food Composition Databases”, United States Department of Agriculture, March-2018 Available: https://ndb.nal.usda.gov/ndb/ [Accessed: 22-February-2019]