**MASTER OF TECHNOLOGY INTELLIGENT SYSTEMS 2020**

**PATTERN RECOGNITION AND MACHINE LEARNING SYSTEMS (PRMLS)**

**FINAL PROJECT REPORT**

**Your Dietician**

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1 EXECUTIVE SUMMARY

With paying more and more attention to the importance of diet in modern society, people all over the world want to reasonably control the daily diet. However, in many cases, people don't know what to eat every day to keep themselves healthy. In order to enable users to have a clear understanding of their own physical condition and give them proper dietary advice based on their physical conditions and needs, we decided to carry out this project. In the whole process, we designed four main functions for our project:

(1) Calculation of body BMI: users can choose directly input height and weight data or upload their facial photos to the website. It will tell you your BMI, which is a very important parameter to measure the body fitness, so that the user will have a certain understanding of himself before eating.

(2) Calorie Bank: users can enter what they have in their meal here, and we'll tell you the total number of calories.

(3) Food image recognition: the system will tell you the calorie and nutrition information of food by uploading photos.

(4) Recipe recommendation: recommend daily recipes for users according to their previous physical condition and needs.

We believe that the first three functions described above can help users understand their own physical condition and whether their current eating habits are appropriate. Then, we recommend recipes for users based on their needs. The completion of this project can solve the puzzles of most dieters. Similarly, it can also let housewives know whether the nutrition of three meals a day is insufficient.

Four of our team members also use the system to provide reference for our daily diet. In the process of implementing this project, we found that the biggest challenge is how to collect and analyze the information widely, so as to provide the most appropriate suggestions for users.

So we decided to create our own dataset. In addition to using public datasets like food image dataset, we use crawlers to obtain relevant data (recipes and human face) and do data filtering. Finally we get our own data set to realize the function of the project. Then, we use the algorithm and model learned in the pattern recognition course to train and debug different functions.

In the process of project implementation, we have encountered many difficulties and have been forced to give up a lot of interesting ideas. Although we are so tired but we still have gained a lot. Limited by the time and our personal ability, the project still has a lot of improving space. Maybe in the future after we exploring more on the road of machine learning, we will back to fill in some gaps in this project.

2 BUSINESS PROBLEM BACKGROUND:

In any corner of the world, diet must be one of the most important issues because it will have a significant impact on their daily activities. All people want to be healthy, but people don't know how to eat so that can be healthy. For example: knowing little about their own physical condition, not knowing whether the current diet is lack of nutrition or not, not knowing whether the food in front of you is excessive in calories or not and what kind of food is fitness one, etc.

We consider that we can not blindly recommend recipes to users just based on their physical condition and current eating food. So we choose to make a recipe recommendation after understanding the user's needs (like building muscles and losing weight, they will contribute to a completely different recipes)

3 OBJECTIVE

Our project has three main aims:

Let the users:

1. Know his own BMI. Body mass index (BMI) is a measure of body fat based on height and weight that applies to adult men and women. It is better for people knowing their physical situation before giving recipes suggestions.

2. Know the nutritional information of currently eating food. By calculating users’ daily food nutrient information using calories bank or food image recognition, users can find whether their current food is suitable or not.

3.Suggest them some recipes basing on their need.

Therefore, our team members have designed four functions to satisfy the objective.

(1) Calculation of body BMI: In this part, users can choose direly upload the weight and height data or upload a facial picture to the website. If upload the data, the