Third Year Project

University of Keele

Department of Computer Science

Connor Bridle.
Computer science student
15018645
January 23, 2018

Contents

1 Introduction

The issue of healthy eating and obesity is widely researched and discussed within the Western World. Technology has often been attributed to the increase in worldwide obesity. In L.D. Rosen's et. al paper, using their predetermined categories, found that only 43% of teenagers fell into the 'acceptable' range (REFERENCE nihms657969). However, with the increase in availability of technology and computing power; it can be used to modernise the fight against obesity. In this project, the aim is to use various computing techniques to analyse and classify whether or not certain food items are 'advisable' to eat. The outcome of this research will hopefully be an application that users can input nutrition information into and it will classify the food item.

1.1 General papers/fields of interest

1.2 Key papers and literature

Stuff

1.3 Nudging

Nudging plays a pivotal role in improving the lives of the general populace; who often don't even know they are subjected to it. Having the ability to 'nudge' people to alter or change their lifestyle and behaviour is of great interest to governments around the world; including the UK government (**?**). Nudging is particularly relevant within this piece of research as influencing the behaviour of individuals, especially when it comes to dietary choices, is at the core of the project. Theresa Marteau and her colleagues put forward the point that people in general value their health yet persist in behaving in ways that undermine it **?**. Common examples of nudging for weight loss include making salad the default order on a meal at a restaurant rather than chips. This subtle technique may make people more likely to order with a salad; therefore increasing the nutritional value of the meal.

1.4 Key nutrition/healthy eating standards literature

Stuff

1.5 Technologies role in promoting change

Stuff

1.6 Objectives of the project

The following are the key objectives and pieces of work to be produced throughout the process of the project.

- Identification of key nutritional measurements and the amount at which it is considered as high and low intake.
- Creation of a neural network to classify food items on whether or not is it 'advisable' to eat them.
  - Creation of 3 datasets: A training dataset, a benchmark dataset and a testing dataset.
  - Program the neural network implementation into the Java environment

- Creation of a piece of client software that will act as the interface to enter nutrition and additional information to the classification network.
  - Creation of interface designs for the client-side application
  - Implementing the design in the Java environment

2 Method

2.1 Design

User Interface Design This is the stuff to do with interface design

Neural Network Design This is the stuff to do with NN design

2.2 Implementation

Implementing the client side application

Implementing the back-end Neural Network

2.3 Measurements

Calories

Fat

Saturated Fat

Carbohydrates

Sugars

Fibre

Protein

Salt

Gender

Age

Time of day

Level of activity

2.4 Construction of dataset

How is was constructed

How many data samples

3 Results

Includes testing the system. What did you find? Often presented using figures, graphs, tables and screen-shots.

4 Discussion

What did you find? What does it tell us? How does it relate to literature and your expectations? Critical evaluation of the results

5 Conclusion

Includes further work. How could this work be developed, what were the shortcomings, why were certain objectives not achieved. How does this work contribute to the wider field.

5.1 Future work

Applicability of QR codes placed on food items along with food labels

Applicability of OCR to scan nutrition data from food labels

Development of a mobile application

5.2 Shortcomings of project

The potential differences in cultures that could causes implications to the viability of the final solution.

5.3 Objectives not achieved

Stuff $f(x) = 1^4 \cdot 5.5$