DAT602 - Materials

For our DAT602 Everyware project we have decided to produce a Smart Fridge. The idea behind the fridge is to allow users to track what food is being put into their fridge and then use this data to give them an understanding of how healthily they are eating as well as being able to use this information to plan out meals for the user. The fridge will be built using a Raspberry Pi as the main computer controlling the fridge and we will use Node-red to power the back-end functionality of the system. The idea is to allow the user to scan food items into the fridge which will probably be done using a webcam that can be used with the Raspberry Pi. We will then use the Google Cloud Vision API[1] to tell us what is in that photo and using this information we can then use the Tesco API[2] to make a grocery search for any relative products. We also plan to build a barcode scanner into this system which can be used as a backup if Google Vision does not recognise the image. Another idea we have had is to use a standard barcode scanner such as those that would be used in a supermarket to scan the food items. Is we go down this route we will still be able to use the Tesco API as this work with the GTIN number which is that data stored in the barcode.

We have also been looking at different recipe API's that we can use for the meal planning element of the fridge. The recipe API that we will probably using is the Edaman Recipe API[3] which allows us to get recipes from many different sites as well as information such as calories and ingredients. Edaman also offers access to a Food database which allows us to collect information using a barcode. We will still probably use the Tesco API as it will allow us to show off a number of different services and also means that we won't be over using our API limit for Edaman.

Within the fridge itself we plan to use an Arduino to monitor the fridge looking for things such as the door opening as well as using pressure or weight sensors to listen for items being removed from the fridge. We are thinking about building a system that can work out what has been removed from the fridge based on the weight of the item that has been removed similar to how the scales work in a self-service checkout machine. It is hoped that we can connect the Arduino to the Raspberry Pi using a Wi-Fi shield and use an MQTT websocket to send data between the two so that the interface can react to items being removed or the door being opened

Another idea is to produce an app to work with the fridge which will allow the user to see what is in the fridge and also any recipes that they can cook. We also plan to use the app to show the user any nutritional information based on the food items that are in the fridge and what meals that have eaten in the past week.

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[1] https://cloud.google.com/vision/
[2] https://devportal.tescolabs.com/products/56c73300d73fa303ed060001
[3] https://developer.edamam.com/edamam-docs-recipe-api