**A picture containing shape

Description automatically generated**

**Smart Cereal Dispenser**

Internet of Things Project

Project Proposal

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# **Project Description**

My project allows the user to see exactly how much food they are eating in a fast and timely manner. Rather than breaking out the weighing scale and the calculator to figure out the calories that you’re eating and how much sugar is in the cereal you can use the handy website that automatically weighed the cereal once you have dispensed it to calculate the calories, sugar, energy, etc in the amount of cereal that you have dispensed.

Using the load cell you can calculate the weight of whatever is on top depending on whether it is above 5kg as the load cell can only calculate to 5kg. The load cell will placed below the bowl so it can weigh it when the bowl is placed on top and again when the cereal has been dispensed. Knowing these 2 figures the ESP32 can subtract the pre-dispensed weight from the post-dispensed weight and figure out to the exact gram how much cereal is in the bowl.

The user can then log-on to the ESP32’s built in webserver and select from a list in a drop-down menu the cereal that has been dispensed. Once the ESP32 knows what cereal was dispensed it can compare the grams dispensed to the calorie per gram of the cereal. A few options would be Coco Pops, Cheerios, Shreddies, Rice Krispies, Fruit ‘n Fibre, Crunchy Nut.

The user would then be able to view the calories, energy, fat, carbohydrates, sugar, protein, and salt. As the ESP32 would have a few hard coded macronutrients for each cereal that it can dispense. This is the main functionality of my project. The user would then be able to dispense milk using a peristaltic pump.

In case the cereal is running low an ultrasonic sensor would be able to detect that and display a warning message using a built in LCD and also on the website. An ultrasonic sensor (HC-SR04) works by sending an ultrasonic signal and measures the time it takes for the signal to bounce off something and come back. Using this information the ultrasonic sensor can detect if the cereal is full as it would bounce back very fast in the reservoir for the cereal. Alternatively it would take longer to bounce back toward the sensor as there would be a bigger space.

# **Architecture Diagram**

Put your architecture diagram here …