The Refrigerlator

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Introduction
The Refrigerlator serves to take a digital inventory of a refrigerator and determine which recipes are available to cook-up based on the user’s diet. The breakdown of our system can be separated into four portions: scanning, weighing, wireless transmission, and data analysis. The product’s UPC code is scanned, and then placed on a weighing device. The scanner transmits the UPC code information to the user interface via USB, and the scale wirelessly transmits the weight information to the user interface via single-board microcontroller. As the user interface accumulates the refrigerator inventory data, our system calculates recipes involving the products in the user’s refrigerator.

Motivation
In today’s society all kitchen appliances are digital, “smart”, and futuristic, except the refrigerator. Coffee machines are designed to start brewing the second its owner hops out of bed, toasters can predict the 5-day weather forecast, and ovens can display top news stories for each day. The purpose of our project is to propel the modern day kitchen even further into the future.

Design
The components of the Refrigerlator are a charged coupled device, a strain gage, an arduino, and a user interface. The scanner is programmed to acquire any product’s UPC information, send it directly to the user interface, and accumulate an inventory of refrigerator products. After scanning, the product is placed on a strain gage scale. The strain gage scales are reverse engineered, coupled with an arduino, and designed to read an amplified voltage change. The arduino converts the amplified voltage change into a force applied (weight in ounces), and sends this information wirelessly to a user interface. The user interface couples the information, product name and weight, and stores it in a four tablet Microsoft Excel sheet. The first tab stores the refrigerator inventory, the second tab has a list of recipes, the third tab outputs the recipes available for concoction (second tab) based on the inventory (first tab), and the fourth tab instructs the user how to cook-up the recipes.

Conclusion
The concept behind our project is simple, but innovative. While the communication and operations are not completely optimal and user-friendly, it brings forth a unique potential.