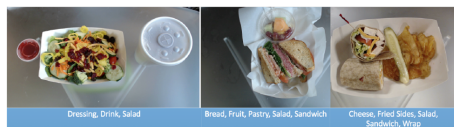# An algorithm for tracking nutrition that can accurately categorize foods based on image

Unmet Need

Obesity prevalence for adults in the United States has reached 42.4% according to the most recent report from the National Center for Health Statistics. Given the public health and medical consequences of obesity and unhealthy eating, nutrition tracking and nutrition research are of critical importance. Smartphone apps that track nutrition are now commonplace in app stores. MyFitnessPal, the most popular diet-tracking app in Western countries, boasts over 165 million users. It is also the most common nutrition app recommended by dieticians. While the mobile application is convenient, it can be burdensome to enter foods manually that don't offer a barcode. Other methods used by nutrition researchers to measure the nutritional content of foods, including various food surveys, often rely on recall or are also burdensome for participants. There is a need for technologies that would capture accurate nutritional data that is convenient to users.

Technology

Duke researchers have developed an algorithm that can accurately categorize foods using a picture captured from a smartphone. This algorithm is intended to be implemented into a mobile application that can be used by both consumers and researchers to track nutrition. A dataset of 7721 meal photographs taken by patrons in a cafeteria setting were used to design 22 broad categories recognizable by image. The inventors split the dataset into 3 mutually exclusive subsets: a training set (5250 images), a validation set (1312 images), and a test set (1159 images). Using a convolutional neural network and standard machine learning techniques, they then tested the operating characteristics of the

algorithm. This technology has been demonstrated to place food items from a meal photo into correct categories with high accuracy.

Advantages

- Can offer nutritional information about food (entire meals) through just an image
- More convenient and less burdensome then current methods for tracking nutrition
- Demonstrated high accuracy in proof-of-concept testing

Dressing, Drink, Salad | Bread, Fruit, Pastry, Salad, Sandwich | Cheese, Fried Sides, Salad, Sandwich, Wrap

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External Link(s)

- From the lab of Dr. Anthony Viera