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MTDiet: Real Time Diet Assessment with Thermal Image of Food

Automated diet monitoring and caloric intake prediction is an effective intervention technique for chronic diseases such as obesity and diabetes that affect nearly one-third of US adults. Recent studies show that camera-based applications that automatically identify type and quantity of food from an image of the food plate increase the likelihood that an individual will adhere to a diet monitoring program. However, state-of-the-art systems available on the market today have about 63% accuracy for identifying cooked food. Therefore, scientists are now looking to create a reliable program with an improved food-detection accuracy to ultimately improve the health of those individuals suffering from chronic disease.

Researchers at ASU have developed a smartphone-based automated diet monitoring system that uses thermal images of food. The system that the researchers coin, "MT-Diet," uses thermal maps of a food plate to increase accuracy of extraction and segmentation of food parts, and combines thermal and visual images to improve accuracy in the detection of cooked food. The simplified method results in a cost-effective system for the user that is also easy to use. MT-Diet can separate food parts from the dish with an accuracy of 92.5% and determine the type of food with an accuracy of 88.9%, a significant improvement compared to current technology. Overall, MT-Diet fuses thermal and visual images to accurately segment and identify food items on a plate and aid those individuals suffering from chronic diseases.

Potential Applications

- Thermal Imaging
- Health Related Applications
- Personal Fitness and Nutrition

Benefits and Advantages

- Improved Accuracy – increase in food identification accuracy from 63% to 88.9%
- Ease-of-Use – the framework fuses thermal and visual images taken by the user to seamlessly generate information about food consumption and lets users easily track caloric intake
- Cost Effective – MT-Diet's reliability and simple interface makes it easier for users to adhere to the system and generate positive results while remaining at a relatively low cost

For more information about the inventor(s) and their research, please see:

Dr. Sandeep Gupta's directory webpage

[Dr. Ayan Banerjee's directory webpage](#)