Ideation Phase

Literature Review

Date	20 September 2022
Team ID	PNT2022TMID46718
Project Name	AI-powered Nutrition Analyzer for Fitness Enthusiasts

Paper / Title	Author	Year	Objective	Proposed Technique	Limitations/ Improvements
EVIDENCE-BASED DEVELOPMENT OF A MOBILE TELEPHONE FOOD RECORD	Bethany L Six, TusaRebecca E Schap, Anand Mariappan,	2011	(1) to test whether participants' proficiency with the mpFR improved after training and repeated use, and (2) to measure changes in perceptions regarding use of the mpFR after training and repeated use.	1) Image Segmentation 2) Volume Estimation 3) FNDDS Indexing Nutrient Info	Needs to accommodate the lifestyles of its users to ensure useful images and continuous use throughout the day or multiple days.
FOOD IMAGE ANALYSIS AND DIETARY ASSESSMENT VIA DEEP MODEL	Landu Jiang	2020	To design and implement a system for food image analysis - output the amount of nutritional ingredients of each food items from daily captured images. A thorough dietary assessment report will be generated based on what you have during the meal.	Extract the regions of interests (ROIs) by applying the Region Proposal Network derived from the Faster R-CNN model. Apply Convolutional Neural Network (CNN) on selected RoIs and classify them into different food item categories. A regression module is also used to locate the food coordinates in the image.	To provide a healthy diet, an automatic diet calculator.

AUTOMATIC FRUIT RECOGNITION: A SURVEY AND NEW RESULTS USING RANGE/ATTENUATION IMAGES	Jimenez A, Jain A, Ceres R, Pons J.	1999	To recognize spherical fruits in different situations such as shadows, bright areas, occlusions and overlapping fruits.	Two images represent the azimuth and elevation angles the attenuation is in *ATTE*(*x, y*) and the reflectance image *REFL*(*x, y*). The image analysis process uses the images obtained from the scanner to detect the position of the fruits by thresholding and clustering.	Cannot work with low resolution images.
DEEPFOOD: DEEP LEARNING-BASED FOOD IMAGE RECOGNITION FOR COMPUTER-AIDED DIETARY ASSESSMENT	Chang Liu, Yu Cao, Yan Luo, Guanling Chen, Vinod Vokkarane, and Yunsheng Ma	2016	To propose a new CNN architecture for food image recognition and apply benchmark on UEC-256 and Food-101	A new architecture was proposed based on the backbones of LeNet, AlexNet and GoogleNet. After convolutions, it was followed by sub-sampling to reduce dimensions and FC layers.	The inference time is extremely long for even a single image and hence not feasible to deploy in real time
DEEP-LEARNING-ASSISTED MULTI-DISH FOOD RECOGNITION APPLICATION FOR DIETARY INTAKE REPORTING	Ying-Chieh Liu	2022	To integrate ML innovations of a realistic mobile health application using mobile ICT and AI technology to allow people to report their dietary intake easily and accurately under real conditions.	Adopted EfficientDet-D1 with EfficientNet-B1 as the backbone. EfficientDet detector architecture with EfficientNet was selected	Yet to be integrated with a mobile app or web application.