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DeepFCE: Food Calorie Calculation and Estimation using Food Images and Deep Learning to Prevent Weight Gain and Obesity

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Abstract

Obesity in adults and children at present is considered a global plague and has tripled since 1975 making it a serious issue present in the society that is given very less attention but secretly killing individuals both physically and socially and mentally. According to the WHO the main cause of obesity and overweight is the energy imbalance between calories intake and calories wasted. Due to the modernization and the competitiveness in the present society people find it difficult to maintain a proper BMI in order to help people to refrain from being overweight and obese, a calorie counting system will be introduced which calculates calories present in an image through an inserting a food image or an image of the meal. with the system users can be aware of the calories they will be intaking and keep record of it as well. with the extensive literature conducted on the existing systems, was able to identify the gap in the Sri Lankan food domain where the inability of the existing systems to detect Sri Lankan food. Also, the gap in detecting packet food like biscuits is a limitation. Also, in weight estimation the usage of a reference object in food image can be a limitation. The project DeepFCE is a calorie counting application that is able to detect Sri Lankan food items and packet food items and estimated the calories present in them. With the preparation of the data set on the Sri Lankan food future researches can conduct research by incorporating this dataset into their models.

Keywords: Calorie Calculation, Mask RCNN, Detection and Segmentation, Image Processing and Computer Vision, Volume and Weight estimation