Design and Development of a Food Detection System with Image Processing Technology Based on Android Using CNN Method

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ABSTRACT

The importance of monitoring calorie intake and consumed food is increasingly recognized as essential for maintaining overall health. Manual processes for detecting food and calories often hinder the adoption of healthy eating patterns. Therefore, this study aims to develop a system based on image processing technology that can detect food using the Convolutional Neural Network (CNN) method, implemented within an Android application. The dataset used in this research consists of various food images labeled with food category types and their corresponding calorie content. The data undergo preprocessing, augmentation, and training stages. System evaluation using a confusion matrix demonstrates that the developed CNN model achieves good accuracy on 99% in classifying food types. The resulting application enables users to scan food using Android devices. This research is expected to contribute to helping individuals more easily manage their food intake, control calories, and maintain healthy eating habits.

Keywords : *Android*, *Deep Learning*, *Convolutional Neural Network* (CNN), *EfficientNet, Food Detection*.