ABSTRACT

Body health is essential in everyday life. Maintaining a balanced diet and meeting nutritional needs are the main factors in maintaining a healthy body. The government has set the Angka Kecukupan Gizi (AKG) as a guideline for Indonesian society. However, a lack of understanding and control over food intake can lead to malnutrition and health problems.

To overcome this problem, Capstone Design presents the Android-based Foodit application, which can assist users in calculating and controlling their daily intake of macronutrients. There is a feature in this application to estimate energy requirements by using a regression model that will calculate macronutrients with Acceptable Macronutrient Distribution Ranges (AMDR). In addition, there is a feature to input food through object recognition utilizing the object recognition model used to recognize food automatically. The Foodit application is supported by cloud computing services such as Google Cloud Platform (GCP) and Firebase is used to access data online.

Based on the tests conducted, the Foodit application has good performance. The regression model used in energy calculations is Poisson regression which has a high level of accuracy with an MAE of 103.48 and a MAPE of 4.7%. The object recognition model, YOLOv8, achieved the highest map value of 0.994 with a hyperparameter learning rate of 0.001 and a batch size of 8. The Foodit application also received positive user ratings with an average SUS score of 86.25. The Foodit application successfully passes all specified test scenarios, demonstrating optimal performance and meeting user needs and expectations. However, there is a performance constraint on the server VM Instance when handling 200 users for 10 minutes.

Keywords: Foodit Application, Android, Regression Model, Object Recognition Model, Cloud Computing.