

ABSTRACT

Stunting, a chronic nutritional problem, affects the growth and development of children in Indonesia. The 2023 Indonesian Health Survey (IHS) reported that the prevalence of stunting in Indonesia reached 21.5%, far from the government's target of 14% by 2024. Stunting must be prevented as it increases the risk of disease, premature death, and reduced productivity and cognitive ability in adulthood. While there have been several stunting prevention apps in Indonesia, many still do not provide efficient nutrition tracking features or personalized nutrition recommendations, which are crucial for early stunting prevention. To address these shortcomings, this research developed the Android application “Genting” with a case study of Bandung City PKK, which uses Vision transformer (ViT) for food image classification and Google Generative AI for personalized nutrition recommendations. The ViT model used achieved 82.12% accuracy on the validation dataset after 20 epochs, with a loss value of 0.6725. This application was developed using the Extreme Programming method through three iterations, with ViT model testing using the label prediction testing method. In each iteration, 10 images were tested, each representing one different food class out of a total of 30 classes. As a result, the ViT model achieved a classification probability of 99.99% in the first and third iterations, and 99.97% in the second iteration, indicating very high model confidence. Functionality testing of this application was carried out using the Black box testing method, which showed that all features were successfully executed and provided output as expected, and the usability test results by users showed an excellent level of usability, with System usability scale (SUS) scores of 85 in the first iteration, 87.5 in the second iteration, and 80.8 in the third iteration. The “Genting” application offers an innovative solution for nutritional monitoring and recommendations as well as early stunting prevention by combining machine learning technology and customized nutritional recommendations.

Keywords: *Stunting prevention, Vision transformer, Nutritional Recommendations.*