

ABSTRACT

As artificial intelligence (AI) technology continues to advance, many sectors, including healthcare, are beginning to adopt this innovation to simplify various everyday tasks. This research aims to develop a mobile application that integrates two key AI features: AI Food Recognition and AI Text-to-Speech, to assist users in more effectively and efficiently monitoring their food intake. The AI Food Recognition feature allows the app to automatically identify the type of food consumed by the user simply by scanning an image of the food using a smartphone camera. This identification process uses machine learning algorithms based on image recognition, trained with an extensive food dataset, enabling the app to accurately recognize a wide variety of foods.

Once the food image is recognized, the app provides information on nutritional content, calories, and recommendations for healthier eating habits. The AI Text-to-Speech feature then converts this information into speech, allowing users to listen to the information verbally without having to look at the screen. This is particularly useful for users with visual impairments or those who prefer to receive information hands-free, especially when busy or engaged in other activities.

The research methodology used is quantitative, with an experimental approach to test the app's effectiveness in identifying foods and providing accurate recommendations based on user data. Based on testing conducted on 50 food image samples, the application demonstrated a classification accuracy of 87,5%, with a Mean Absolute Percentage Error (MAPE) of 11,32% for calorie estimation. Meanwhile, the AI Text-to-Speech feature achieved an average latency of 2,1 seconds, and its voice quality was rated by users at 4,2 out of 5, based on the Mean Opinion Score (MOS). Overall users satisfaction, measured using the Net Promoter Score (NPS), reached 40. Users reported that the app is highly effective in helping them monitor their food intake in a more practical and interactive manner.

Keywords: AI, Food Recognition, Text-to-Speech, Mobile Application, Image Recognition, Health, Healthy Eating Habits.

