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(57) Abstract :
Design and development of a software system to improve diabetes management utilizing a machine learning technique, as well as demonstration and evaluation of its usefulness in diabetes control. By combining multiple artificial intelligence algorithms, the proposed strategy for this management system addresses the various elements that affect the health of people with diabetes. The proposed framework divides the challenge of diabetes management into subgoals: creating a TensorFlow neural network model for food categorization; as a result, users can upload an image to see if a meal is safe to eat; Using cognitive sciences to construct a diabetes question and answer chatbot; tracking user activity, user geolocation, and creating pdfs of logged blood sugar levels. Cross-entropy measures were used to evaluate the food recognition model, which were used to support validation using neural networks with a backpropagation technique. The model recognized aspects of photos fed from Ghanaian dishes with special nutritional content and importance in diabetic management and offered correct image classification with labels and associated accuracy. The model met its objectives by accurately predicting the labels of fresh photos. For specific calorie intakes, the meal detection and classification model obtained above 90% accuracy. The performance of the meal recommender model and question-and-answer chatbot was evaluated using a cross-platform user-friendly interface created with the Cordova and Ionic Frameworks for mobile and web application development. The system successfully used CNN (with) to recommend meals to satisfy the calorific demands of users and responded to inquiries in a human-like manner. The deployed system would address the issue of diabetics' activity management, dieting suggestions, and medication notification.

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