

Automatic billing system for Sri Lankan pastry shop

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With the advancement of information technology and artificial intelligence, employing science and technology to improve the food industry's low efficiency is a very effective approach. Many cafeterias in Sri Lanka and other countries have long queues for food payments because of the high volume of customers at particular times of the day. Queues can occur when the demand for a service exceeds the facility's ability to supply it. Most bakery goods and pastries in Sri Lanka are unique, and there is still no trained data set for identifying Sri Lankan pastry or bakery items. This paper solves this issue by including real-time image recognition techniques in the procedure. It is possible to eliminate the need for manual price computations by employing a camera to shoot a live picture at the checkout counter with an image recognition model, which produces the total invoice automatically. The recognition capacity of models determines the actual benefit of these systems under unconstrained conditions. A real-world dataset was gathered for testing the algorithms. The images were captured in a real bakery shop, with pastries arranged in various ways on a tray. Each tray can hold between one and seven pastries. A collection of ten different categories was gathered. TensorFlow SSD MobileNet V1 was used to train, validate, and test the image recognition model, including 2000 dataset images. The overall technique can be defined as detecting Sri Lankan pastries using Convolutional Neural Networks and developing a user interface in Python using Tkinter. According to the experimental data, the recognition accuracy of individual entrees was around 90%, and that of the full tray was approximately 95%. The advanced training may improve the model's accuracy on a larger dataset, and using the approach during the checkout will become more practicable.

Keywords: Artificial intelligence; Convolutional neural networks; Food payments; Real-time image recognition; TensorFlow SSD MobileNet V1