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Smart veggie identification and alerting system for supermarkets using image processing techniques and neural networks

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Abstract

The recent advancements in the field of image processing have become a great source of benefit to the development in fields of science and engineering. Image recognition is one of the foremost areas in computer vision as it yields favorable results in many applications. One of the main applications in image recognition is the object recognition; this is a process of identifying a specific object in an image or a video. In this paper, we present the current state of the image processing techniques to identify vegetables and fruits, and is capable of being installed with existing hardware resources. The implemented system can identify vegetables and fruits in a basket that are to be retailed and alert authorities when a basket is near to being empty. The system is based on color and size comparison of the vegetables and fruits in a live video with a reference image and thereby extract similar features by using neural network for identification. Height of the baskets is marked with colored lines, contrasting to the color of the content. The level of the basket is identified through the visible levels of the color lines and then the notifications are sent to the responsible parties. The system is tested with two vegetables egg plants and tomatoes as well as two fruits apple and oranges. Accuracy in identifying egg plants and apples have shown to be high, with the accuracy of the results for tomatoes and oranges being average.

Keywords: Color identification, Image processing, Object recognition, Neural network

Introduction

Information Technology (IT) for business alignment is a dynamic state in which a business organization can use IT effectively to achieve business objectives and improve financial performance or marketplace competitiveness. With the development of technology many revolutions have been occurred in business-to-business or business to consumer transactions. The traditional grocery store idea has been evolving in to a "mega shops" which carry all the goods shoppers need. If we observe the drivers for the evolution of current supply chains, or "contemporary trade" they had been chronic in boom demand for cost added client products, comfort food, beverage, and frozen confectioneries (Bolle et al., 1996; Sojitra and Patel, 2016). Usually customers have an idea what they want to buy. This is mostly because of modern customers browse internet daily and follow the other TV commercials to make them aware about the best products to pick. For an example, new analysis has revealed that the "experiential factor" is driving today's foodstuff shoppers who are seeking positive preparation experiences, creating deliberate selections from the shop to the stove, as well as needing to feel smart regarding the food they eat. They have pride within the brands they buy and share their change of state journeys on-line (Applebaum, 1951; Sukanya et al., 2016).

However, after implementing the system it was convinced that the sellers should be much more aware about the customer preferences to increase their sales. System