Universiti Teknologi MARA

Fruity Vegetable Recognition System Using Color Histogram and Brisk Features Extraction

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STUDENT'S DECLARATION

I certify that this report and the project to which it refers is the product of my own work and that any idea or quotation from the work of other people, published or otherwise are fully acknowledged in accordance with the standard referring practices of the discipline.

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ABSTRACT

This project study is about development of fruity vegetable recognition prototype system which is tomato and bitter melon. Unfortunately, there are some problem occur in process to deciding feature extraction of recognition process which is single descriptor may lead to failure because of similarity features and there are a lot of properties and features to be consider in image recognition. This project proposed to use Color Histogram as color feature and Binary Robust Invariant Scalable Keypoints (BRISK) features extraction as one of ways to overcome the problem. In process to extract the two main features, K-means clustering algorithm is used as background subtraction method with combination of Canny's Edge Detection and Mathematical Morphology Operation for shape extraction. The system training is conducted on 20 images for each category to build knowledge of it. Knowledge is built based on extraction value of color features and average value of 5 strongest keypoints. Then, from the built knowledge, system testing is conducted using other 10 images to check functionality of system to recognize image by calculate the similarity measure using Euclidean Distance formula. From the testing result, system prototype has shown satisfied rate of accuracy which is 86.67% for tomato and 90% for bitter melon. Furthermore, other than recognize a fruity vegetable, this project also help to give introductory knowledge and information about fruity vegetables. In conclusion, this system prototype is achieves project's objectives and its significance. Limitation of this current prototype can be improved by proposing other appropriate techniques and methods in order to enhance scope of this recognition prototype. This project also has potential to be enhancing to mobile application that provides flexibility of uses.

TABLE OF CONTENTS

CONTENTS **PAGE**

CHAPTER THREE: METHODOLOGY

CHAPTER FOUR: EXPERIMENT AND RESULT