1 Introduction

Object recognition is a technique in Computer Vision to identify objects in an image or video. Object recognition is key in the output of Deep learning and Machine Learning algorithms. When humans see images or watch videos, humans can quickly point to where people, objects, views, and visual details. The goal of Object Recognition is to teach computers using Machine Learning in order to get a level of visual understanding equivalent to humans. Based on the previous explanation, Object Recognition has the potential, to identify objects quickly and reliably using Raspberry Pi. Raspberry Pi is a tool that is often used as a prototype tool for various projects, both academically and in terms of hobbies, and has the potential to be used in the field of Object Recognition. Object recognition algorithms rely on customization, learning, or pattern identification algorithms using appearance-based or feature-based techniques. Combining the Object Recognition system with Raspberry Pi is very possible and has been explored beforehand, in this proposal we will try to see the compatibility of the Object Recognition system with the Raspberry Pi system that we set up.

1.1 Background

The point of this comparison test is to see whether the performance of manual detection algorithm which in this case is CamShift can perform on par or better than automatic detection algorithm such as YOLOv2. By doing so, it is hoped to create more potential for this system to be used in the future. The combination of image processing method with Raspberry Pi is technically possible and have probably been researched before All that's left is to test which one is more suitable to use between these two methods. In order to make it not biased, we will be conducting 2 tests, the IoU Accuracy test and the frames per second (FPS) test. There are many potentials for this system to be used, and may provide more research material for the field when implemented.

1.2 Problem Identification

Object Recognition System and Computer Vision Algorithm in determining the level of accuracy using the mean-average Precision (mAP) method, which has been defined in PASCAL VOC 2012. Other things are classified relative to the tools used, such as processing speed, the level of confidence between objects detected, etc. Based on the explanation above, the problem this time is which method is more efficient between YOLOV2 and CAMshift. Based on what has been described above and in the introduction, the aim of this study is to compare which method is more efficient, the compatibility of the Arduino system with Object Recognition, and whether it is suitable for daily use.

1.3 Goals

The aim of this research is to compare the performance between YOLOv2 and CamShift, two different performing image processing methods against each other as well as to try implement them alongside Raspberry Pi 3 system.

1.4 Writing Organization

The next sections are organized as follows:

Literature Review : includes related researchs and papers, which is may be referred in this paper.
System Arrangement : the explanation of the system's structure that is used in the current experiment.
Evaluation : includes the results and the analyzation of the experiment.
Conclusion : the final analysis of the experiment and what can be derived from it.