PUSL2021 Computing Group Project

Group Assignment

***System Proposal***

Group Members

* M.O Wickramasinghe – 10899497
* H.S.M.S. Seelawansha – 10899426
* H.G.A.U.I Wijesinghe – 10899435
* G.J.k Weerarathna – 10899433
* G.G.H.P. Senevirathne – 10898910
* Overview

We have decided to implement a sorting machine prototype with color detection by using Arduino technology and IOT principles. This prototype will detect the color of the object by a camera and direct the object to the correct sorting places. The objects will be carried by a conveyer belt. The camera is programmed for artificial intelligence by “open cv” application. This will train the camera to identify the color and send the output to the Arduino board for future procedure. The main colors that will be detected are red, blue, and green. There will be three boxes with color labeled. We are planning to use an ultrasonic sensor to detect the distance between the camera and the object. By reading the object distance the speed of the conveyer belt will be changed.

By a servo motor the direction of the object will be changed according to the color detection output given by the camera. We will also add an emergency stop button to pause the process until the start button is pressed.

We have decided to add an Arduino display to display the current quantity of objects in each of the color boxes. This will be counted according to the turns that will be performed by the servo motor. Also, to the emergency stop, we are planning to add an alarm to the system.

After the building the system, we are expecting to connect the system by an application. A user can view the past and current quantity of the objects in the color boxes. The application data will be updated after one cycle of sorting objects. The main coding programs that will be used are Arduino IDE and Open CV. The system will be connected to the laptop and the data update will be done by laptop. All the main connections will be made by the jumper wires.

* Objectives
* Sort the objects according to the object’s color.
* Simplify the sorting process.
* Update the current information to view remotely.
* Minimize the pressure faced by the employees.
* Speed up and organize the sorting process.
* Improving the safety of the employees.
* Continue an information log about the object quantity.
* Target Users
* Large Scale industry owners – Who need large object sorting process.
* Employees – Who work in sorting process industries.
* Company Supervisors – Who keep the object quantity updated.
* Application Features
* Object Sorting - Sort the Object according to the object’s color.
* Emergency stops - Maintain the user safety.
* Quantity detail viewing - Object quantity can be updated and viewed on the application.
* Object log - Keep a quantity log.
* Editable information - Quantity information can be changed after sorting in special cases.
* Speed up the sorting process - Increase the effectiveness of the sorting process.
* User login – Application login for users.
* Application – Details can be viewed remotely through the application.
* Can minimize faults – Human errors can be minimized.
* Online view – Applications and system are connected.
* Time Frame

A screenshot of a computer screen

Description automatically generated