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Project: Color Detection

Supercomputing Challenge: Interim Report

Problem:

Although we may often overlook them, colors are a very prevalent and important part of our life. However, how often do we utilize technology in order to get an advantage on color detection? According to *Envision Intelligence* “Color is one of the most influential attributes of light, although we may not be aware of this fact and its importance. Nonetheless, color plays a distinctive role of immense importance in our daily life and quite a few industrial and scientific applications. The number of sensors dedicated to sensing color is minimal, and the existence or operation of such sensors are little known to the public. (Teja)” Through this we can see how little these devices are being utilized. So, how can we, as students, start to utilize this color detection technology in ways that are relevant and interesting to us?

Solution:

The members of Women in STEM 310 compete in many different challenges. One of these challenges, Botball, requires a lot of color detection in order to complete certain tasks and gain more points in order to “win” (Botball). The desire to make color detection easier in this challenge sparked our interest in color detection and how we could improve upon it. Currently, we have been using the Botball modules and provided cameras in order to learn about and reach our goal. However, we have also looked into other units that might help us complete our task.

Progress:

Thus far, with the current technology, we have been able to connect the camera to the module and are working on the code in order to, hopefully, improve upon it. As we continue on with this unit we have been using the *Botball Workshop Slides* from 2023 so that we can best understand these units and the extent of their possibilities (guide). We hope to further our knowledge on computer vision as a whole by looking into other studies such as *COCO* (Lin et al.) and *Hugging Face* (“Models”). We have also, briefly, explored other options, such as raspberry pi and LoRa units. However, exploring these other options was discouraged by our advisor since they were not directly related to the challenge that our main units apply to which is why we haven’t pursued any other paths further. Although, if needs be, we would be able to use a few different units in order to accomplish our goal.

Expected Results:

As we continue in this project, we hope to successfully identify colors with the Botball equipment by the end of January and spend time improving it throughout February. If we have any more time left then we would like to explore the other possibilities that the invention has. Although we have only speculated about using this project with other challenges, we can still see how this system can be applicable in many other situations that utilize colors and computer vision. By completing this, *Women in STEM 310*, hopes to better their personal knowledge of

code, as well as improve current technologies related to computer vision in order to help the world through innovation.