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Mini Project 4 Write-up and Reflection

Project Overview

In our project, we explored how OpenCV can be used to track an object of a specific color. We decided to use this tracking ability as a way to control games that utilize the arrow keys. Our video input controller is universal, it works with any game, but we have also written a game that specifically utilizes our controller for testing purposes. In this game, we decided to explore keeping a score and randomly generating enemies.

Results

Our video input controller is able to sense if a purple object is located in the left, right, upper, lower, or center section of the camera's field of vision. For all of these five sections, except for the center, the controller simulates having the corresponding arrow key being pressed (for example, if a purple object is in the right section of the field of the field, then the controller will simulate having the right arrow key being pressed). When the purple object is in the center of the field of vision, no arrow key pressing is simulated. However, there can only be one purple object in the field of vision or else the controller will not work properly.

In our game, the player moves around a stick figure character using arrow key input, or what the computer thinks to be arrow key input, to interact with hearts that fly across the screen. If the character collects a pink heart, the score goes up by one. However, if the character collects a black heart, the score goes down by one. If the score goes negative, the character dies and the player loses the game.

Implementation
Reflection

Developing the controller was difficult. Since neither of us had had much practice with OpenCV or computer vision beyond the face tracking toolbox, we had problems figuring out how to track a colored object. We also found difficulty in figuring out how to convert the location of the glove into a simulation of keyboard input. However, we believe that if we had started our project by first reading through the OpenCV documentation instead of trying to start writing the program without any knowledge, we would have had an easier time.

Furthermore, we believe that the scope of our project was slightly too large. Originally we had believed that making the controller would be a lot simpler because we thought that it would be a lot more similar to the computer vision toolbox. However, once we noticed that the simplicity of the toolbox lies in the fact that OpenCV comes with a face detector function, which is not what we needed, we realized that creating our controller would be very confusing and would deal with concepts which we had never before seen, such as moments. As a result, in addition to developing a game, we also had to create something with which we had no previous experience.

Our team process was good. We planned on dividing the