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6.111 Final Project Checklist

The Commitment:

Image Detection Module:

Be able to display the pixels in black and white with the exception of the LEDs.

Command Converter Module:

This module is able to derive the basic actions from the linear trajectory of specific body parts, including jump, up, down, left, and right.

Display Module:

Display a simple stick-type game character on VGA monitor with actions from the command converter. The movement will correspond to the x, y coordinates of the character.

The Goal:

Image Detection Module:

Be able to toggle between displaying the pixels in RGB and displaying the pixels in black and white with the exception of the different colored LEDs.

Image Processing Module:

Detects the centroid of each of the LEDs and calculates the relative x and y position.

Command Converter Module:

The module is able to derive more complex actions, such as hand waving, kneeling down, etc., on top of the basic actions we described in the basic goal. The module need to derive the action based on relationship between different markers.

Display Module:

The system is able to display a more complex game character with moving leg and hands while walking. At the same time, the system is able to convert the action command into HID protocol, such as keypad press, and controls game in an external PC.

The stretch goal:

Image Detection and Processing Modules: Skeletonization! Be able to detect several LEDs and their position to create a more finely tuned caricature on the screen.

Command Converter Module:

More complex movement reading and trajectory following, including more actions. We will also integrate a gun module with infrared emitter at the tip. The module will generate the mouse movement action with the trajectory of the IR pointer, while the system will also track the trigger pulling.

Display Module:

For VGA display, we will integrate moving background picture and audio for more realistic display. For the game control, with the gun model, the FPS screen will move just as how we use mouse to move the point of view in an actual game for a more immersive experience.