1 module checklist

1.1 Playback(manual)

This is the first module that will be worked on. The manual mode control will be implemented, and the module will be interfaced to the motor control module. This control is only open loop. If pressing a button makes the robot go in the right direction, it works!

1.2 Finger Tracker

This module will average the X and Y positions of all points of a certain color for a given frame of video. It will also store the two averages in memory every half second, for a total of 255 samples. A good way of testing this is to output the current average to a testing module that will draw a rectangle of some height/width (the blob module from the pong lab?) around that point. If I wiggle my finger around and the rectangle on the screen wiggles, it works! Watch the memory address on the LEDs to make sure it's incrementing right

1.3 PS/2

Suck in the values, and put a given byte onto the LEDs. Wiggle the mouse around and watch the deltax and deltay values change when it wiggles, or watch the button LEDs change when you click the buttons. Output the absolute position on to the screen by drawing something at the current (x,y) value.

1.4 Directional control

Using the two mice on the front and back of the robot, keep track of the angular rotation of the robot, and use that to keep track of the robot's position on the screen. To test it, make some sort of dial on the screen to indicate the robot's angle.

1.5 playback (closed-loop, single point feedback)

Hardcode a point into verilog. Hook up the robot and mice and watch it go to that point.

1.6 playback (closed-loop, set of points)

Hardcode a set of points into a ROM and use that in place of the memory, and see if the robot travels to all the points. It will help to use the screen output here to display what the robot thinks its x,y coordinates are, and the desired coordinates.

1.7 finger tracker writing to memory

Use the finger tracker to store a set of points in a RAM, and draw a line from point to point on the screen to display the current stored path.

1.8 playback (path tracing)

Hook up the screen output modules to display the stored points in memory, and then watch the robot's position change on the screen/in real life and see how it tracks the points.

1.9 Gesture Recognizer (if I have time)

Turn an LED on if it sees some threshhold number of points of a chosen color. Show the current number of points vs the threshhold on the 16 digit display.

1.10 gesture recognizer writing to memory (if I have time)

Make the gesture recognizer write its output to memory along with the finger tracker.

1.11 playback with gestures (if I have time)

The playback module travels along one path if a conditional is specified, and another path if the conditional is not. Draw both possible paths on the screen, making the conditional TRUE path a different color than the conditional FALSE. Plot the position of the robot next to the points, and watch it follow the proper point.