Snake Raspberry Pi Contest

Porter Doughty

The proposal

- Original Idea was to have a gps based snake game using Bluetooth and latency to triangulate the position of the raspberry pi and the player would move the raspberry pi to control the snake.

   This idea was immediately squashed not only due to the cost of the components needed, (Several UWB receivers and transmitters), but also the complexity of the project and my experience coding with raspberry pi.

The proposal, Part 2

- Being discouraged, I aim my sights elsewhere and decided it would be better and more feasible to completely change how this would work.
- I decided that I would use motion detection and object detection on the player to detect where they were in relation to the boundary and view of the camera. Depending on where the player was, the snake would be moved that direction.

Figure 1.

!!
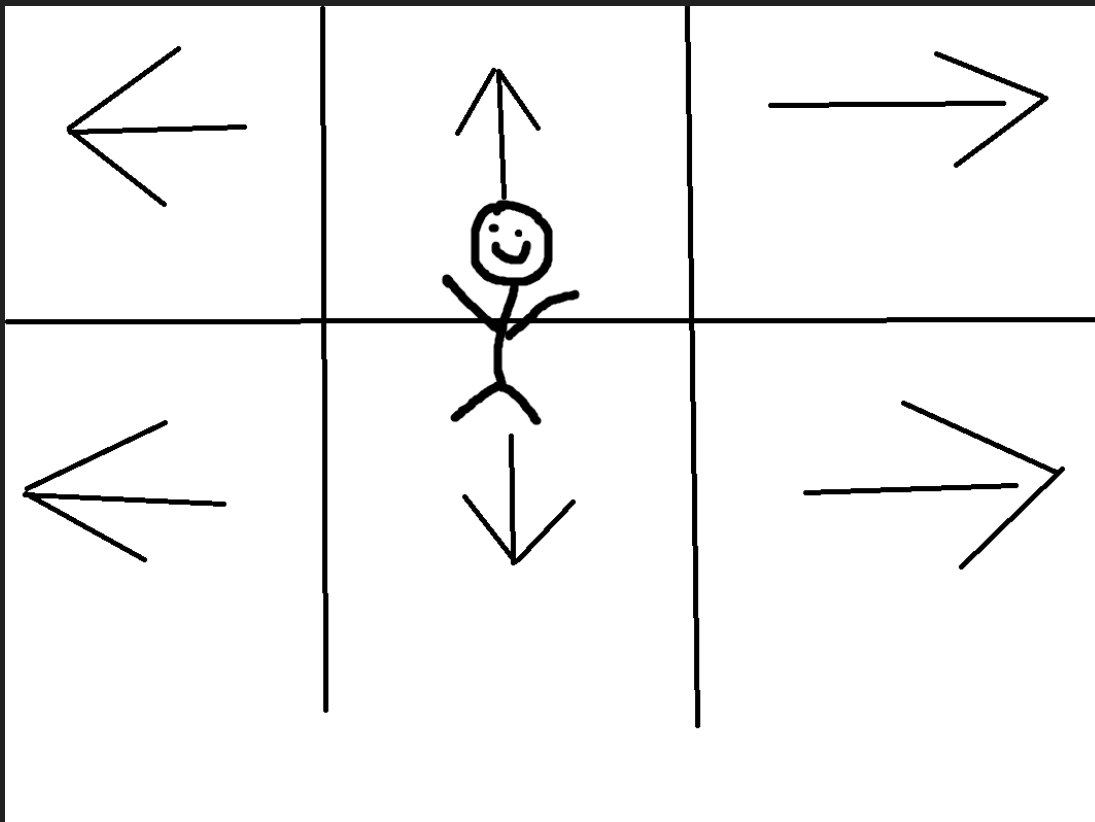
This idea, in fact, was MUCH more difficult than the first option...

The problem

- All was well, the snake game was pretty simple as there are great deal of snake game tutorials in python online.
- Although hindsight 20-20 would have let me see that there were a much smaller amount of tutorials on object detection.
- With the snake game part complete, the only thing left to do, was to change the input of control based on Figure 1.
- However, I ran into a LOT of errors based on version, random and incompatible github solutions, and hours of searching through stack overflow.
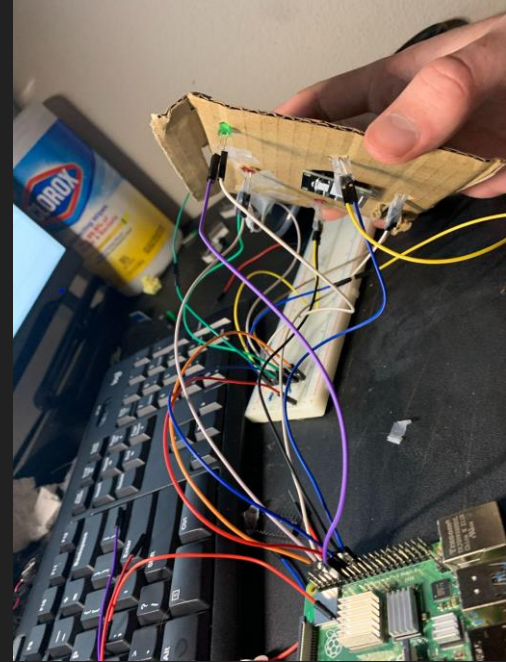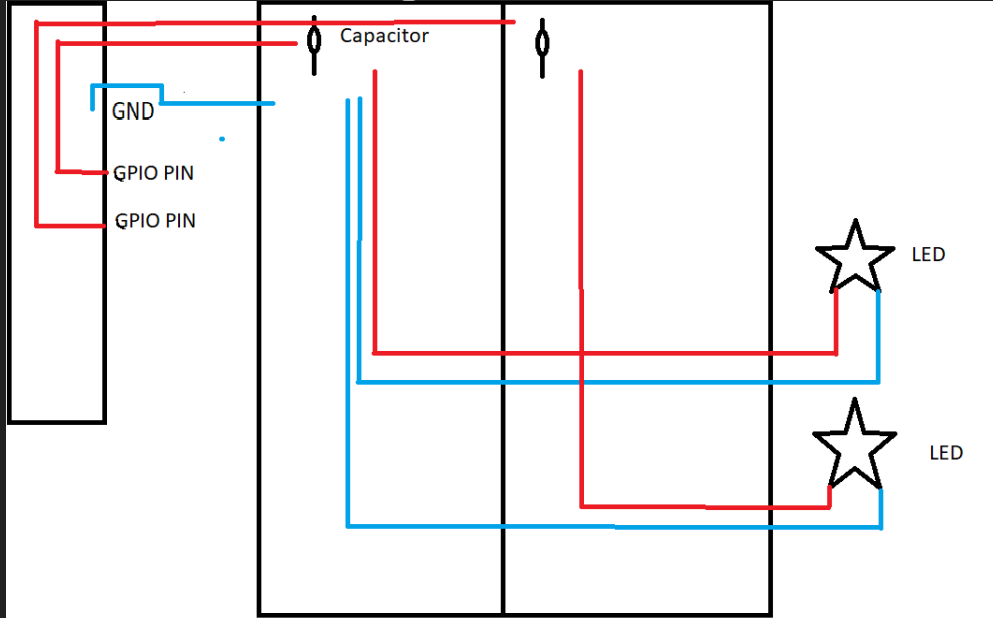
The solution

- SIMPLIFY!!
- Go for a much simpler approach.
- Lights change based on what input on a man made device expertly crafted out of cardboard and scotch tape.
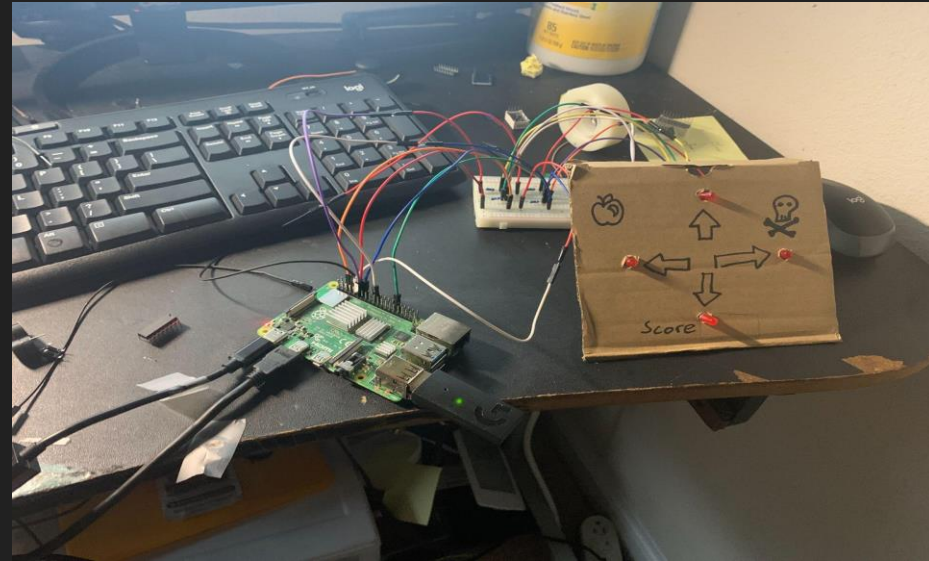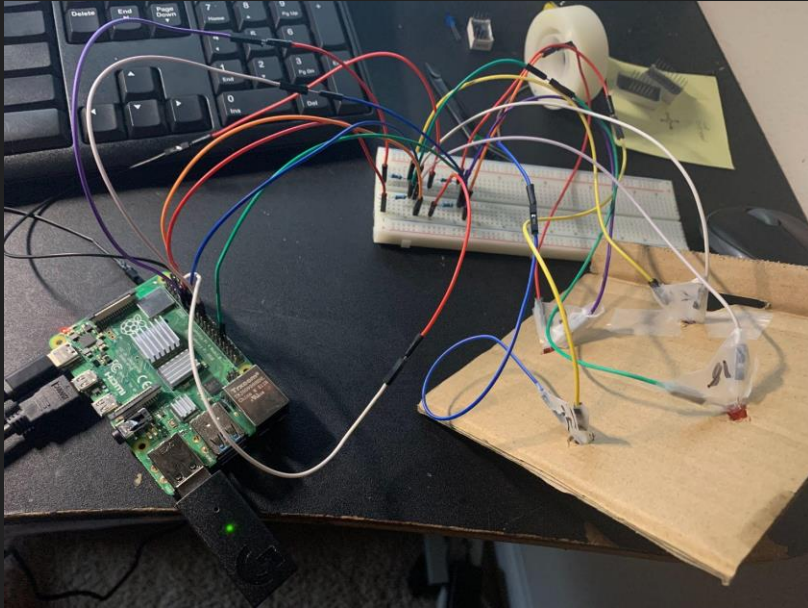- *Possibly change input device to one the devices shown below*

Wiring the LEDs

Below is the diagram of how I wired the LEDS to the GPIO pins on the RasPi

IT'S ALIVE!!!

- After a long period of trying to keep wires and connectors from breaking, I managed to get the first working prototype of the controller.

Further implementations

- Analog joystick for input
- Buttons for input

Both of these were feasible however, the

breadboard was running out of room and

I didn't have enough wires and connectors

 for the buttons. For the analog joystick, and

analog to electric input convertor was required

and I did not have one.
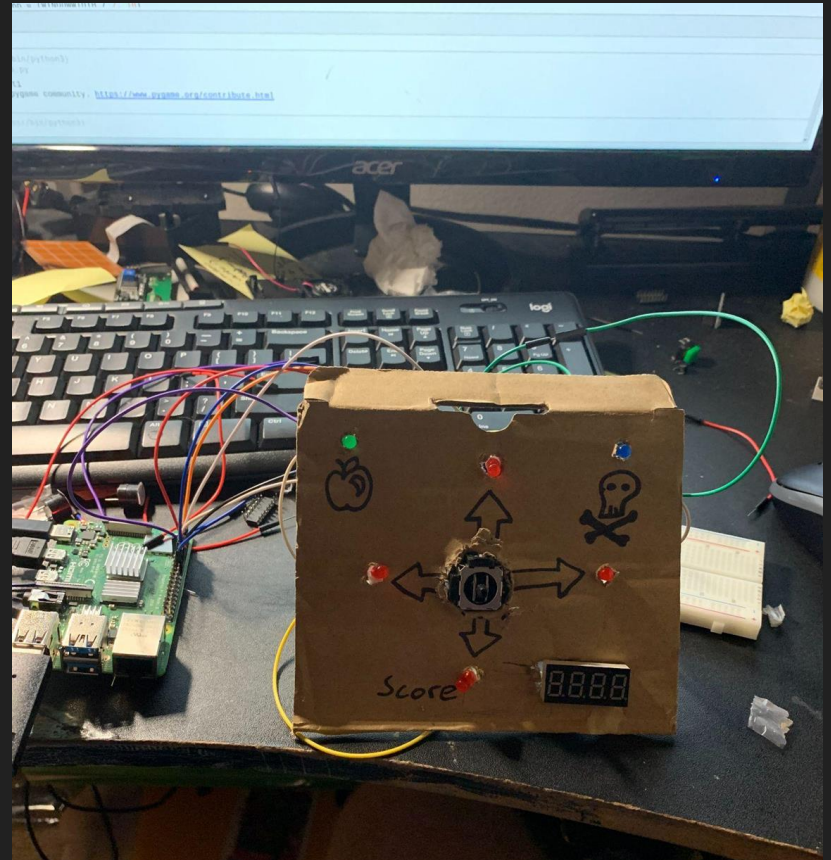
Finishing touches.

- I ended up connected each Red LED to a movement input.
- The Green LED was connected to eating apples and gaining points.
- The Blue LED was connected to dying in the game.
- The finishing touches were putting them all in a user friendly presentation.
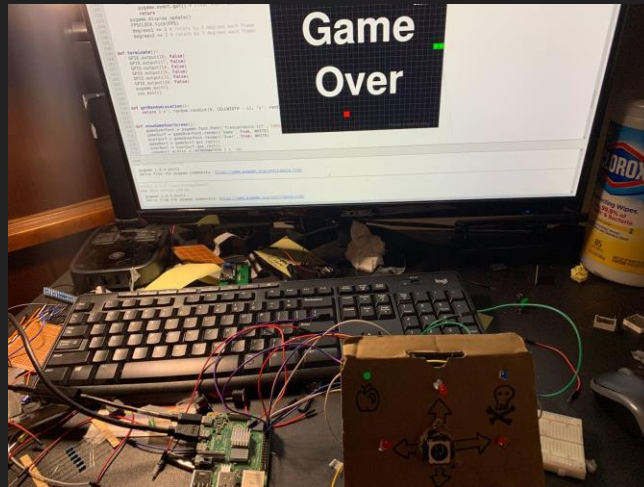
Pro's and Con's from this project

Pro

- I learned a lot about how raspberry Pi's work.
- I learned the wiring system on the breadboards is much easier than it sounds.
- The prototype made can easily be sold and mass produced as its quality is professional grade.

Con

- Triangulating positions is complicated and expensive.
- Object detection with a camera is even MORE complicated.
- There were a lot of wires all over the place and keeping things tidy was a challenge.
- Python is not my most proficient language.

Thank you