CREATING THE LADYBORG

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PROJECT OVERVIEW

The main purpose of this project was to design and code a functional toy robot. The robot would need to be programed to have 4 way directional movement as well as having an interior to hold all of the necessary components and wiring. The exterior of the robot would need to cover all of the wiring and include a functional mechanism that moved alongside with the motors installed inside.

RASB PI PICO SUMMARY

The Raspberry Pi Pico is a low-cost, high-performance micro controller board with flexible digital interfaces, built on silicon designed at Raspberry Pi. Key features include: RP2040 micro controller chip designed by Raspberry Pi in the United Kingdom. Dual-core ARM Cortex M0+ processor, flexible clock running up to 133 MHz.

To code the Raspberry Pi I needed to use thorny, Thorny is a free Python Integrated Development Environment (IDE) that was especially designed with the beginner Saxophonist in mind. Specifically, it has a built-in debugger that will aid with testing various programs and test builds involving the movement of the robot

DESIGNING THE ROBOT

The early prototype for the project served as a base that could house the raspberry pi, a power source and 2 motors. As the design changed overtime I wanted to move towards creating an exterior that could cover these components as well as be removable in order to access the robot's vitals.

The later designs would shift towards creating a ladybug inspired appearance. Using tools in Autodesk I was able to create a dome that could be placed on a wide base that would cover the pi board and motors. The goal of this design was to hide as much of the inside as possible so it would not become a safety risk when played with.

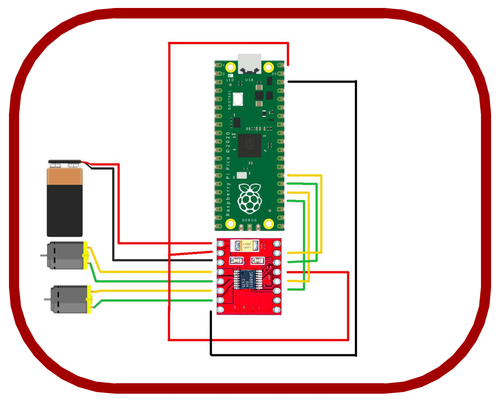
FINAL ASSEMBLY AND TESTING

The next step to creating the robot was to 3D the components created in autodesk fusion and put them together into the final design. Over a period of 2 weeks, multiple pieces of the robot were printed at campus and later assembled at home.

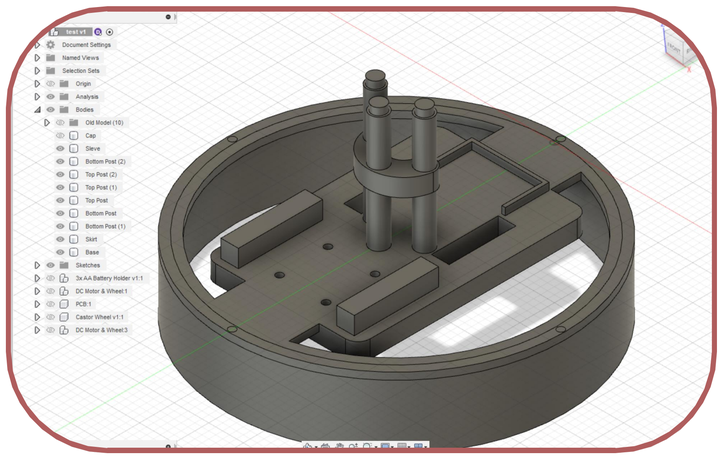
CONCLUSION

This project overall was a fun experience. Being able to learn how to code a robots movements using the pi board was both challenging yet interesting. I would say the project was a success with out the 3d design and programming worked together to create a unique working model that could easily be viewed as a real remote controlled toy.

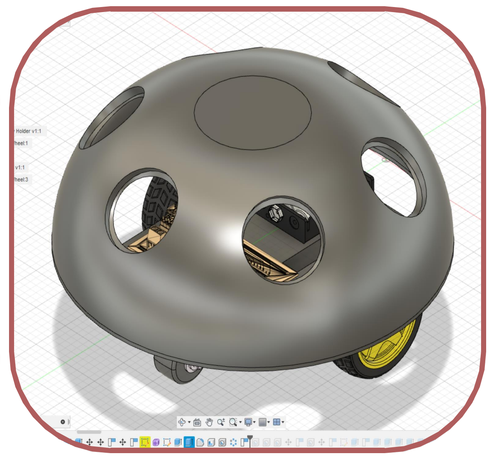
1. Early stages of coding the Rasb pi pico



2. Diagram showing the internal wiring

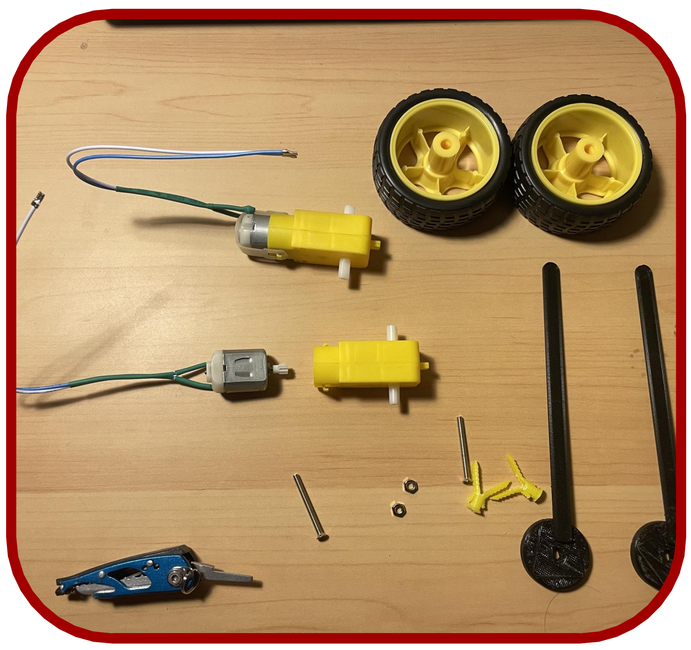


3. Designing the base in autodesk fusion 360



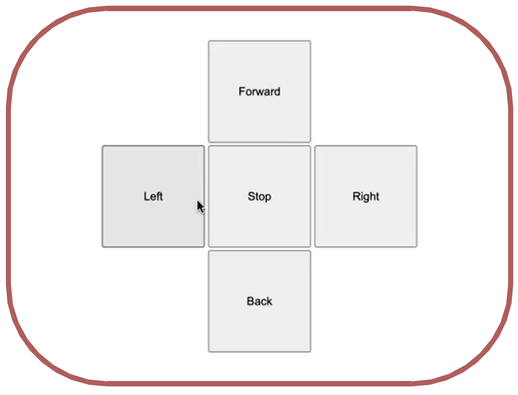
4. Creating the dome as a cover

5. Assembling the printed parts



6. Building the motor and wheel connections

7. Final render in fusion 360



8. Main controller display on webpage

9. Final build assembly and wing function test