Portable E-Fence

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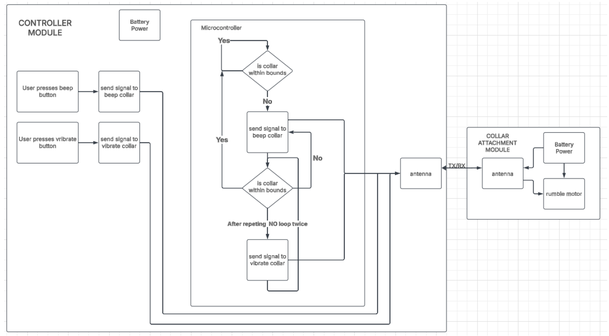
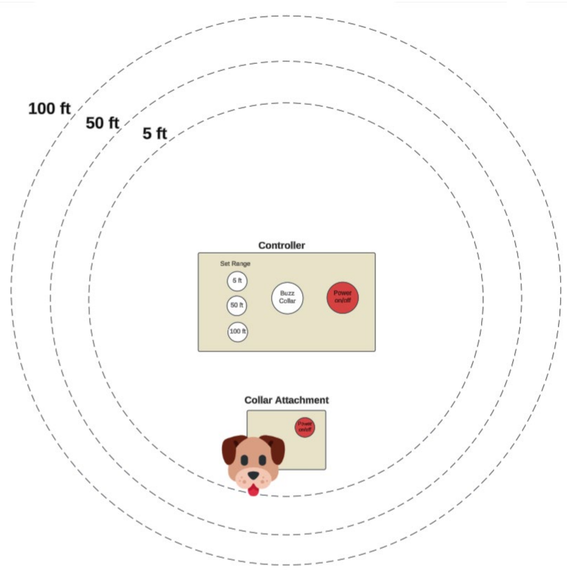
Project

- Create a system that uses wireless communication through radio antennas and is powered by batteries.
- Create a system that is portable and can operate outdoors and in a confined apartment.
- Create a collar attachment that alerts the dog when they have reached a pre-set boundary.
- Develop a controller that enables the user to select from three distinct range settings while also incorporating a manual override feature to alert the dog regardless of distance.

System



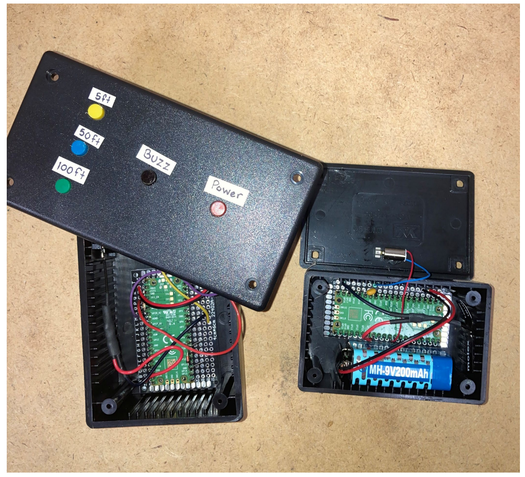


Methods

- **Microcontroller**: Raspberry Pi Pico – small, cost-effective, programmable in Python
- **Wireless**: Dipole RF antenna (2.4/5GHz) with modified connector
- **Vibration Motor**: Chosen for intensity and size; alerts the dog upon boundary breach
- **Power Supply**: Non-rechargeable batteries for simplicity
- **Code & Development**:
  - Started with Arduino + C
  - Shifted to Raspberry Pi + Python
  - Built basic signal → buzz flow; refined through testing and mentorship

Conclusion

- **Final Product**: When a signal is sent from the transmitter, the motor turns on.
- **Take Aways:** Throughout this project I learned how to
  - Find a problem and research solutions
  - Design a solution based on research
  - Document progress that efficiently communicates with a range of audiences
  - How to program and test code on an unfamiliar language and controllers
- **Future Modifications**
  - Design a power supply for a portable system



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