Electronic Pet Door Executive Project Summary

Design Problem

The constraints of our project were six customer/engineering requirements. The customer requirements stated that the system had to be accurate, secure, user programmable, able to open without human input, able to monitor usage, and able to handle an emergency override. These customer requirements translated into six corresponding engineering requirements for which we could test our design against. The six engineering requirements were timing off by less than 1 minute per hour, system able to endure 30 pounds of force, at least 4 programmable lock/unlock times, the door opens 4 out 5 times, usage monitoring should be able to last for at least 7 days, and two-button emergency override system that can open the door from user input.

Approach to solution

Our approach to meeting the 6 requirements was to break the project down into blocks. This allowed us to distribute work based on equality and preference. After the block breakdown, we started preliminary research for our blocks to meet the design constraints. This research and design phase was about 3-4 weeks, and from there, we had a solid design to move forward to the building phase which meant beginning construction block-by-block. We began evaluating each block based on the interface definitions decided on in the beginning of the project, and we made revisions to the overall design or definitions when necessary. Because of the remote aspect of this project, we only were able to meet in person a few times to integrate and test the system. Doing this project remotely required strenuous communication and updating to interface definitions, but we stayed on top of this and the system integration went smoothly.

Key Lessons

Communication plays a major role in success, and meeting multiple times each week helped us in designing and creating the pet door. This was all the more important as the vast majority of the project was done remotely. Throughout the design process, there were many revisions as we learned what worked well and what ideas would not be viable. Breaking the system down into basic blocks, and deciding on what the blocks would do and how they would interact with each other made building and integrating them much easier when they were thoroughly planned out.

Project Section	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10
Conception & Initialization										
Block Definitions										
Block Building & Testing										
System Integration										
Project Presentation										

Project Timeline