



New Paltz
STATE UNIVERSITY OF NEW YORK

Division of Engineering Programs

EGE408_ 01 Senior Design Project I – Fall 2017

Project Charter

[IoT Doggy Door]

Team:

Bryan Darcy, Computer Engineering

Samuel Darkwah Boahen, Computer Engineering

Lunmar Alcantara, Computer Engineering

Stephanie Fernandez, Mechanical Engineering

Daniel Pineda, Mechanical Engineering

Advisor:

Dr. Baback Izadi

09/18/2017

Project Description

- What are you going to design?

We are going to redesign and add an important feature to a Pet Smart Door. A Pet Smart Door is a pet door that opens automatically when it senses a chip on the pet's collar. We will be redesigning the door to have a sliding elevator door motion and we will be adding Internet of Things (IoT) to this product. This will allow for the pet door to be controlled from a phone in order to lock or unlock the door from each side depending on where you want your pet to be.

- What are the design objectives?

Objectives for this design are to create a physical (mechanical) pet door and design an Android app that allows the user to control it at any time and place. Additionally, a cloud server and user interface will be designed to provide smooth interaction. This project needs to be safe for pets, allow for multiple collars to have access to the door, and needs to be able to work from the phone or buttons on the mechanism.

- Why is this project important?

Many people would like to let their dog out into the yard while they are at work or away. With this project, the user will be able to choose when their dog gets to go out into the yard while also being able keeping them in the house if, for example, it's raining. In addition, the elevator door is important to this project because there are many animals that do not feel comfortable walking into a door to open it; some animals are shy. The door sliding open by itself is not daunting and it is actually inviting because the animal just has to walk through.

- What are the Expected benefits?

To allow a sense of safety and a convenient way of keeping an eye on where your dog is.

Engineering constraints. (Reference ABET engineering constraints from 1st lecture.)

- Economic: Affordable consumer price
- Social: Aesthetically pleasing
- Environmental: door must account for weather, leaks, insulation
- Ethical: must be safe to test with live animals

- Health and safety: Wires must be covered, sensors must function properly
- Manufacturability: Project must be relatively simple to make/replicate
- Sustainability: Material must be durable, software must be regularly updated

Preliminary Plan

- Your approach to performing the project.

A prototype has to be made in order to see if this will work in full size for an animal. The door will be 3D designed and printed and then made to fully function with motors and sensors. This will give a good feel for if the project will be a success. The IoT aspect will be developed, tested, and integrated into the design to also see if it will fully work.

- What you want to accomplish for Spring 2017 and Fall 2017

For Fall 2017, the goal is to have a fully working, 3D printed prototype. This will include all gears, motors, wires, sensors, and circuitry. Then, for the Spring semester, a full size of the project will be made for a small to medium sized animal. The project should be almost marketable.

Roles and Responsibilities

- Explain the major role and responsibility of each team member (can be a table)

Bryan Darcy	CE	Android app design
Samuel Boahen	CE	Cloud server setup, Project Management
Lunmar Alcantara	CE	Microcontroller programming, sensors
Stephanie Fernandez	ME	Sliding door & safety, heat transfer testing, insulation
Daniel Pineda	ME	Sliding door & safety, material selection, insulation

Communication Plan

- Planned meetings (day, date, time, subject, attendees)
 - Team meetings

Mondays 3:30pm-4:30pm, all team members

- Advisor meetings

Tuesdays 12pm-1pm, all team members

Additional unique project information or comments.

Possible project co-advisor Dr. Nitya Narasimhan; Mechanical Engineering advisor TBD

Signature of Faculty Advisor

Advisor Name (Print)

Signature

Date