A Proposal to Design and Build an Automated Pet Feeder and Weight Management System

Rachel Heil – heilr@wit.edu
Kristine McCarthy – mccarthyk8@wit.edu
Filip Rege – regef@wit.edu
Alexis Rodriguez-Carlson – rodriguezcarls@wit.edu

Introduction

- Smart Pet Feeder
  - Automated pet feeder that allows for more control than conventional methods
  - Similar products on the market, but none as extensive as our proposed design
- $41 billion spent on pets in 2007
  - $16.1 billion on food alone
- 40% of pets are overweight

Problem Definition

- Sick pets require special diets and large amounts of time and money
- Difficult to make sure the correct pet is receiving medication or special food
- No product on the market to address this issue

The Need

- A low cost automated pet feeder that allows one pet to eat while restricting another
- Make sure pets stay on a special diet
- Easy weight management solution
  - Overweight pets are more likely to get diseases such as diabetes

The Objective

- Allow only one pet to eat from feeder
- Weight management
- Low cost
- Multiple meals stored at once

Current Issues

- Common complaints
  - Cover rotates rather than base
  - Flimsy construction
  - Batteries die too quickly
  - Bulky design
  - Gravity feeders clog
  - No control over amount of food dispensed

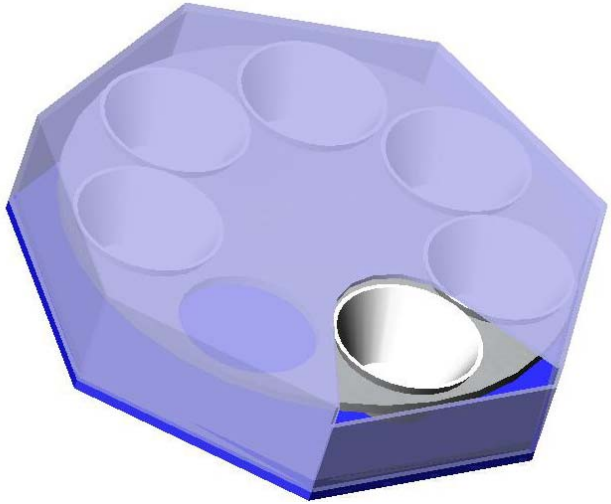
Functionality

- Programmable via touchpad
- Operation times at the consumers' discretion
- Allows the pet to eat only a set quantity of food
- Opens when one pet wants to eat but not the other

Proposed Project (1 of 3)

- Based on similar designs currently at the market
  - Multiple compartments
  - Access to a single compartment at a time
- Our design addresses consumers' complains about competing products

Ergo 8 day feeder



Proposed Project (2 of 3)

- Prevents one pet from eating another pet's food
  - Ideal for people with multiple pets
    - Cat and dog
    - Cat and a kitten
    - Healthy cat and a sick cat
  - IR transmitter on the collar, receiver on the bowl
  - Feeder remains open until it detects the signal from the transmitter - then it closes

Proposed Project (3 of 3)

- Base rotates rather than the cover to allow food to be always in the same location
  - Pets do not need to climb over the feeder
- Powered from wall outlet
  - Less likely to run out of power
- Made from a durable material
  - Prevents pets from getting at food stored for later consumption or the food specified for another pet
- Compartments removable for easy cleaning (dishwasher safe)

Qualifications

- All members of team currently enrolled in Electromechanical Engineering program at Wentworth Institute of Technology
  - Courses include:
    - Network Theory and Analog Circuit Design
    - Digital Systems
    - Computer and Microcontroller Programming
    - Mechanics of Materials
- Previous designs include:
  - speaker design
  - point of sale weight measurement system
  - microprocessor controlled stepper motor

Expected Budget

- Power Supply ≈ $35.00
- Motor ≈ $40.00
- Aluminum plate ≈ $30.00
- Microcontroller ≈ $60.00
- Keypad ≈ $10.00
- Bearings ≈ 2 @ $10.00 ea.
- Shaft ≈ $10.00
- Sensor ≈ 10 @ $1.50 ea.
- Receiver ≈ $1.50
- Cups ≈ $10.00
- Display ≈ $10.00

Total ≈ $250.00

Summary

- Low cost food delivery system
- Allows only specified pet to eat
- Ideal for weight management and other special dietary needs
- Multiple days worth of food stored and ready to eat in one small container

Literature Review and Background Research

- “Industry Statistics & Trends”. American Pet Products Manufacturers Association, Inc.
- “The Overweight Pet.” ThePetCenter.Com.
- “ERGO 8 Day Feeder.” Pet Street Mall.
- “Petmate Le Bistro Electronic Portion-Control Automatic Pet Feeder Customer Reviews.”

Questions?

Thank you for listening.

At this point we would like to open the floor for any questions or comments that you may have.