PROJECT PROPOSAL
PiFeed – Feed Your Pets with a Raspberry Pi

DUE NOVEMBER 9, 2014 AT 11:55 PM.

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NOVEMBER 9, 2014

[ECE 4564] NETWORK APPLICATIONS DESIGN
*Virginia Polytechnic Institute and
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1   Concept of Operations

The purpose of PiFeed is to be able to remotely monitor and control a fish tank and cat feeder from the internet. The system will be composed of two raspberry pi's and one computer. Rasp1 will collect information about the fish tank and control the fish feeder. Rasp2 will collect information about the cat and control the cat feeder. A user will interface with the two raspberry pi's with a client application and be able to monitor both the aquarium and the cat feeder using pi cameras. Additionaly the client application will allow the user to customize the feeders and control them manually. The following figure shows a high level description of the two raspbery pi's.
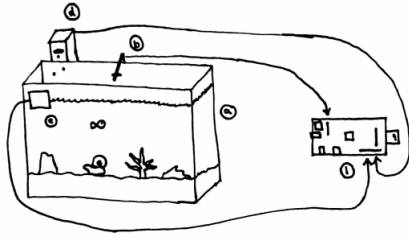

Figure 1: Diagram of Rasp1. (a) Auquarium. (b) Pi camera used for monitoring fish. (c) Sensors used for monitoring aquarium environment. (d) Automatic fish food feeder.

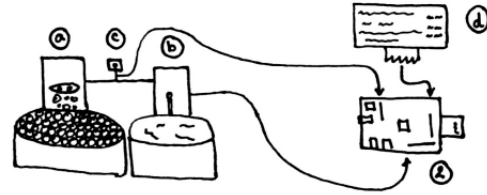

Figure 2: Diagram of Rasp2. (a) Automatic cat food feeder. (b) Automatic cat water feeder (c) Pi camera used for monitoring cat. (d)

2   System Overview

PiFeed is separated into the following modules: PiFeedControl, PiFeedPub, and PiFeedSub.

2.1   PiFeedControl

The purpose of this module is to control the hardware components responsible for monitoring and dispensing food/water.

2.2   PiFeedPub

The purpose of this module is to publish messages to a message broker containing information generated by the sensors.

2.3   PiFeedSub

The purpose of this module is to subscribe to an exchange on the message broker to receive messages containing information generated by the sensors and to process the received messages.

2.4   Testable Requirements

2.5   Use Case Diagram

3   Hardware List

1. 2 Raspberry Pi boards

2. 2 SD cards (16GB)

3. 2 WiFi + Bluetooth 3.0 USB adaptors

4. 2 MicroUSB cables

5. 2 USB chargers

6. 2 5MP camera board modules

7. Jumper wires

8. DS18B20 waterproof temperature sensor

9. AM2302 (wired DHT22) temperature/humidity sensor

4 GitHub Details

Team Member	::	PID	::	GitHub
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5 Project Schedule