PiFeed - Feed Your Pets with a Raspberry Pi!

Daniel Friedman :: Igor Janjic :: Danny Duangphachanh

Virginia Tech

November 19, 2014

Objective

To create an automated cat and fish feeder with internet monitoring and control through the use of Raspberry Pi's

- The ability to maintain a healthy eating schedule for pets is a concern for members of our group, as well as many others who travel or are away from home for an extended amount of time
- By successfully implementing a pet feeding and monitoring system using Raspberry Pi"s, the stresses of animal care while away will be a thing of the past!

PiFeedControl

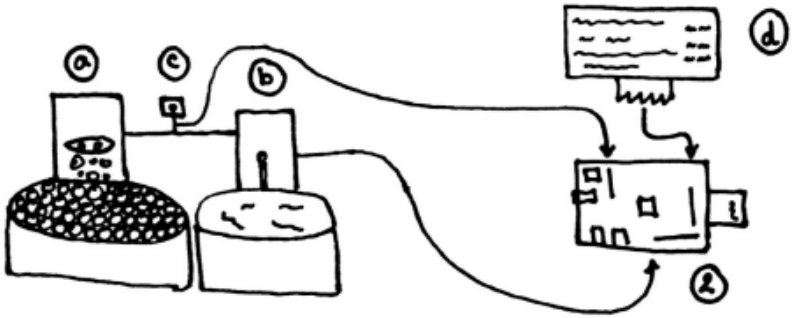
User will interface and be able to control the PiFeedFish/PiFeedCat remotely

- Able to monitor both aquarium and cat feeder using RabbitMQ messages
- Can customize feeders and control manually using custom socket protocol

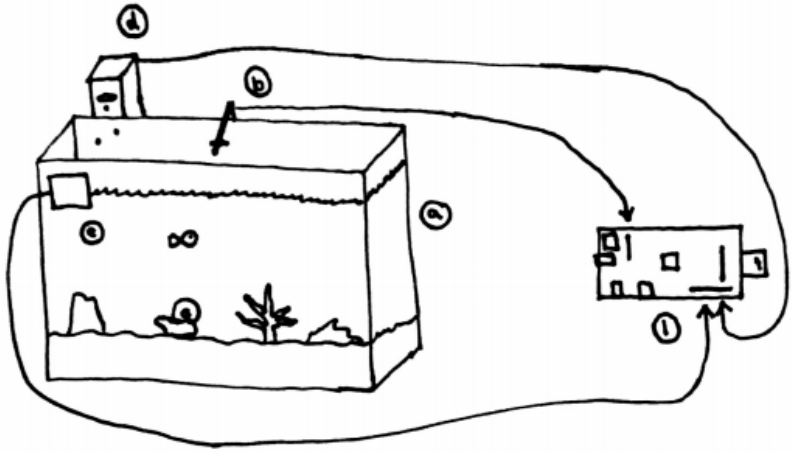
PiFeedFish/PiFeedCat

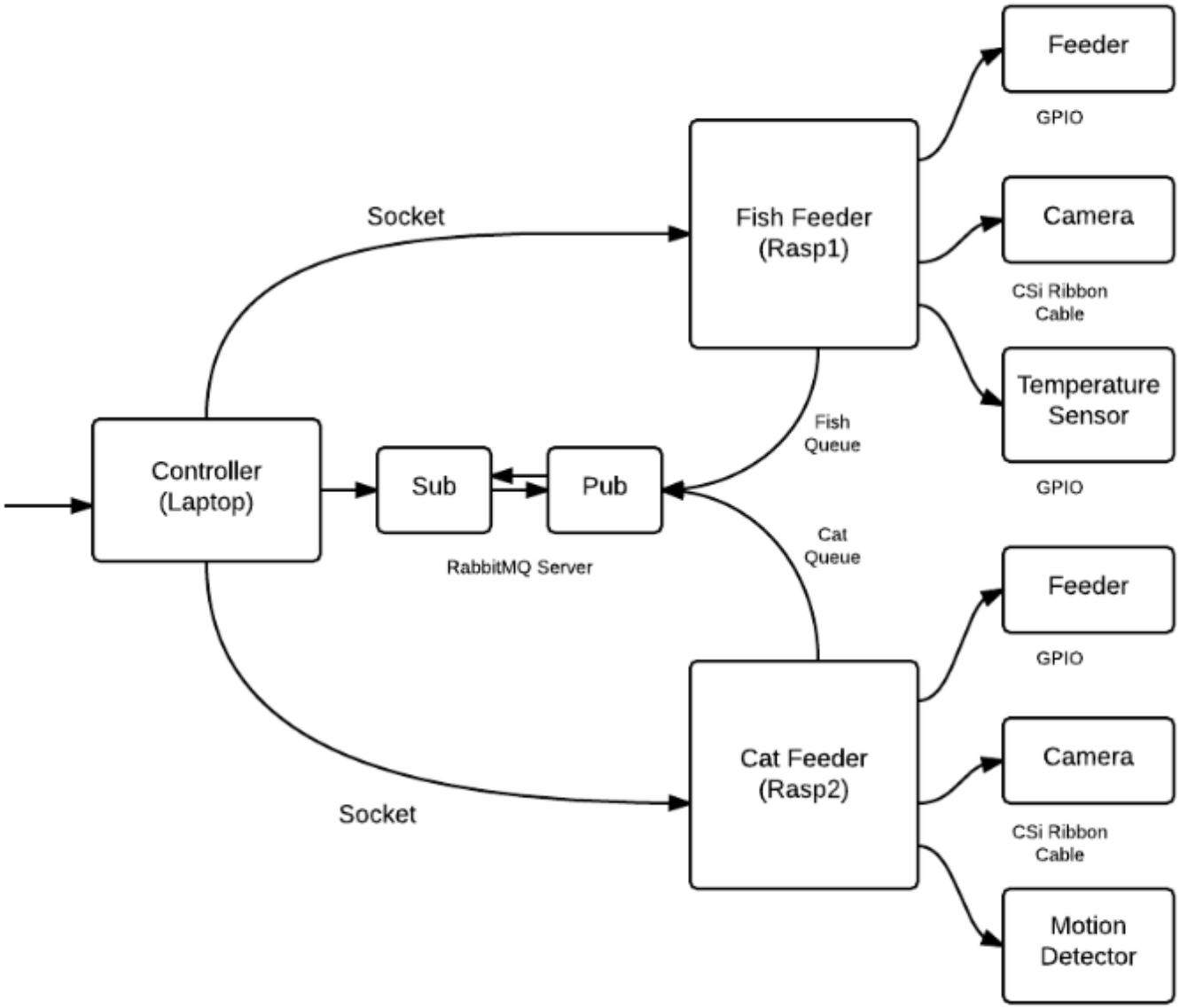
- Module to analyze sensor data
- Sends sensor data when requested
- Controls feeder hardware
- Pi Camera to stream to a client

Cat Feeder



Fish Feeder




Feeder
GPIO
Socket
Fish Feeder
(Rasp1)
Camera
CSi Ribbon
Cable
Temperature
Sensor
GPIO
Fish
Queue
Controller
(Laptop)
Sub
Pub
RabbitMQ Server
Cat
Queue
Feeder
GPIO
Cat Feeder
(Rasp2)
Camera
CSi Ribbon
Cable
Socket
Motion
Detector

IoT Net App Patterns

- All sensor data will be published using RabbitMQ
- User control module will subscribe to the data
- User will access hardware/schedule events using sockets

Everyone

- Build automated fish tank feeder and automated cat feeder
- Test hardware component interfaces
- Test PiFeedControl, PiFeedFish, and PiFeedCat Python modules
- Test communication between all Raspberry Pi modules
- Demonstrate beta build and final build

Danny

- Implement PiFeedCat and PiFeedFish Python modules
- Connect hardware components

Daniel

- Design automatedfish tank feeder and automated cat feeder
- Implement PiFeedControl python module

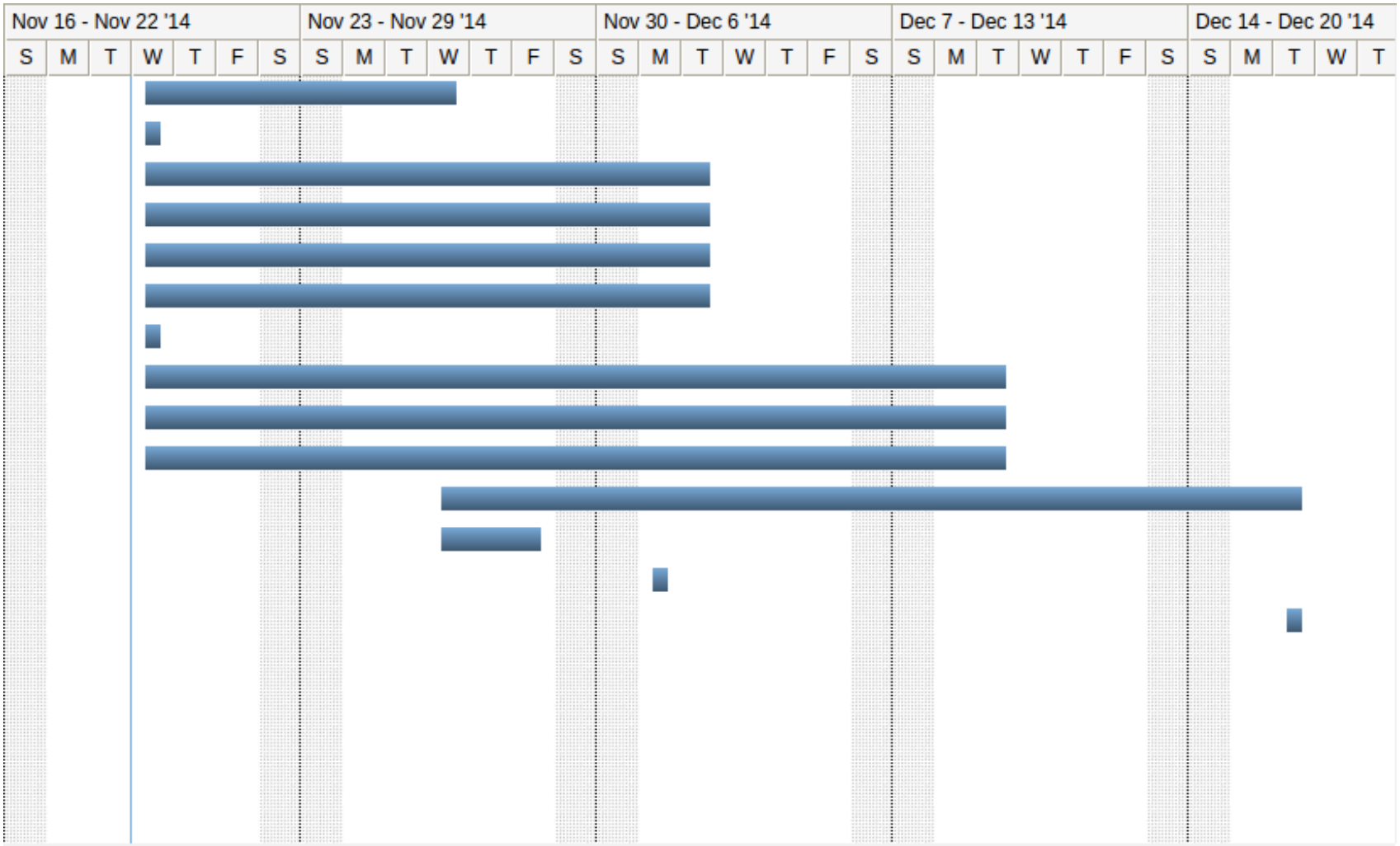
Igor

- Design automated fish tank feeder and automated cat feeder
- Implement PiFeedControl, PiFeedCat, and PiFeedFish Python modules

Schedule

		Name	Duration	Start	Finish
1		Get hardware components	6d	11/19/2014	11/26/2014
2		Set up fish tank and get a cat food and water bowl	1d	11/19/2014	11/19/2014
3		Design fish tank automated feeder	10d	11/19/2014	12/02/2014
4		Design cat automated feeder	10d	11/19/2014	12/02/2014
5		Build fish tank automated feeder	10d	11/19/2014	12/02/2014
6		Build cat automated feeder	10d	11/19/2014	12/02/2014
7		Connect hardware components	1d	11/19/2014	11/19/2014
8		Write PiFeedControl module	15d	11/19/2014	12/09/2014
9		Write PiFeedFish module	15d	11/19/2014	12/09/2014
10		Write PiFeedCat module	15d	11/19/2014	12/09/2014
11		Test all modules	15d	11/26/2014	12/16/2014
12		Test communication between fish, cat, and control modules	3d	11/26/2014	11/28/2014
13		Beta build demonstration	1d	12/01/2014	12/01/2014
14		Final demonstration	1d	12/16/2014	12/16/2014

Gantt


Nov 16 - Nov 22 '14
Nov 23 - Nov 29 '14
Nov 30 - Dec 6 '14
Dec 7 - Dec 13 '14
Dec 14 - Dec 20 '14
S M T W T F S S M T W T F S S M T W T F S S M T W T F S S M T W T