Project Proposal

CS 498 IoT FALL 2020
team return to_sleep;
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When Vishesh was a child he owned a fish. One day when he got back from a movie he saw that the fish had unfortunately died due to lack of food. While discussing project ideas JJ informed us that he currently owns a fish and Vishesh ended up sharing his experience. This is when JJ suggested that there should have been an automatic scheduled pet feeder which would have prevented this from happening. On hearing this idea Vasundhra and Vishesh decided that it would be perfect to create a fish feeder using the IoT skills that we have learnt this semester so that such an incident does not happen with JJ's fish. This was the motivation that led us to decide that we will be creating an **IoT pet feeder.** This project will allow us to feed the fish based on a pre-decided schedule that will be input by the user. We will also have an additional feature that will drop food for the pet through a button on our device so we can feed manually. While this project is being made specifically for a fish it can also be expanded for use for other pets.

We plan on using this pet feeder system to feed the Betta fish (his name's Jello) in the tank based on a schedule or manually, which will help for feeding the fish when there will be nobody in the house for a period of time. We also plan on setting up OpenCV with our Raspberry Pi and a camera to monitor the fish tank and determine if the fish is sleeping or awake, which will be more helpful in determining the right time to feed our fish. We might be able to determine moments during the day when our fish is the most active. Monitoring this movement will also help in determining if the fish has died. We hope that our fish will not die during this project.

Equipment we believe we will be using:
- Arduino uno
- Raspberry pi
- ESP 8266
- Motor
- Camera
- Breadboard

Additional options:
- Use a sensor to check the water quality.

Milestones: There will be three major parts to this project: the physical feeding system with a motor to drive the feeding mechanism (using the Arduino Uno and motor), the camera system to monitor the fish (using a Raspberry Pi and a camera), and the dashboard holding all the controls and information (done with web server code).

Timeline: While the hard deadline for submission of our final project is December 14th, 2020 we have set ourselves a soft deadline where we believe we can complete each milestone during the Fall break of this semester. Since we will all be located in different cities during and after the Fall break we realised that the checkpoints can be completed in parallel since the components are not entirely dependent on each other. It will be practical to create a physical feeder system first. The camera system will not take as long to construct physically. The software components of the feeder, camera system, and dashboard can be completed while the physical components of the project are being completed.

- November 22nd: Physical feeder system completed
- November 24th: Software components of the feeder system completed
- November 27th: Camera system completed
- November 30th: Dashboard completed
- Dec 7th: Work on adding water quality monitoring system if time allows