

IOT Project: Cat Litter Box Notifier

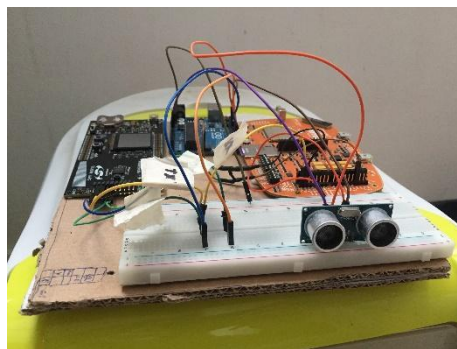
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1 Project Description

Cats use home litter boxes on a daily basis, multiple times, but we don't always know when it is the right time to change them. The cat litter box notifier is a system that senses when a cat uses the litter box and tracks the amount of usage and notifies the user at the right time.

2 Hardware

1. Boards:
 - 1.1. Pearl gecko
 - 1.2. Gemalto modem
 - 1.3. Arduino uno
2. Sensors
 - 2.1. Ultrasonic sensor
3. Connections between hardware:
 - 3.1. Gecko is connected to modem via USART2
 - 3.2. Gecko is connected to arduino via USART3
 - 3.3. ultrasonic sensor connected to arduino digital pins
 - 3.4. We used a breadboard to simplify connections and to make the sensor static



3 Software

Main loop:

1. The program displays the current status/action
2. Checks every 30 seconds the current distance measured with the sensor
3. If the distance is <30cm the program sends a post message to the server and enters a standby mode to prevent posting again over the same litter box usage of the cat.

Notes:

- Led-0 is being lit while posting a message
- Pressing button-1 checks the current distance manually
- Pressing button-0 closes the connection and ends the program

4 Server and database

The server is running a node Express application which exposes a REST api. On a POST request the server logs the time and date of the request in a MongoDB database. When accessed over the browser the application renders a simple interface with some statistics from the database.


You can view the statistics at <http://3.10.225.174:1883/>

PoPo Stats

PoPo went 2 times to the toilet today

PoPo went 4.71 times on average to the toilet this week

The last time that PoPo went was on 4:44:41 PM



Good girl PoPo!