

Team 17: IoT Based Pet Tracker Bi-Weekly Update 4

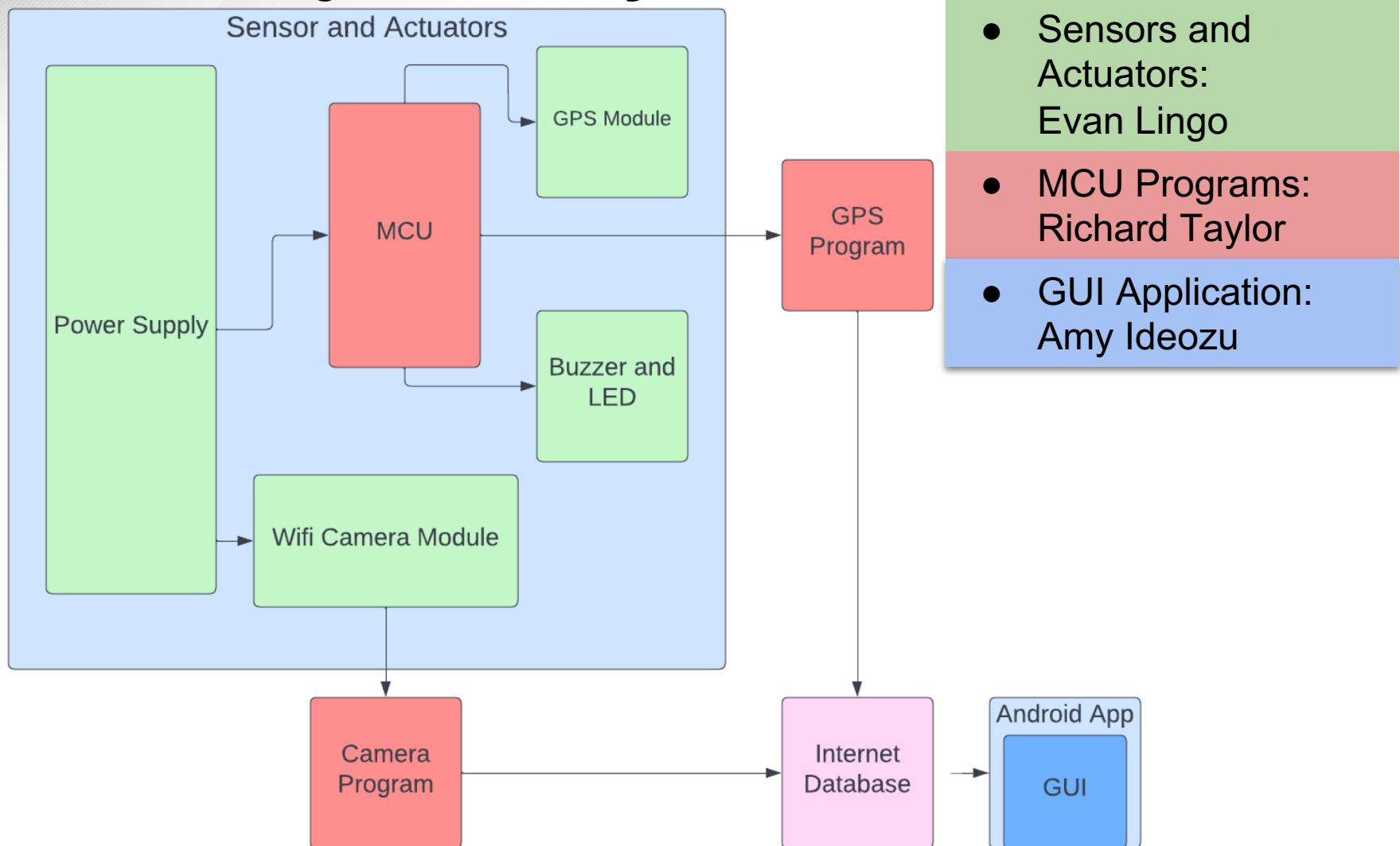
Amy Ideozu, Evan Lingo, Richard Taylor
Sponsor: Souryendu Das
TA: Eric Lloyd Robles

Project Summary

- At times it can be difficult to keep track of your pet
- $\frac{1}{3}$ of pets in the United States are reported missing in their lifetime, with more than 80% never being found
- Develop an IoT Based Pet Tracker to keep knowledge of your pets location via GPS and video feed through the use of an android app



Project/Subsystem Overview



Project Timeline

Subsystem Designs and Testing (completed 9/08)	Integration of S&A and MCU subsystem (completed 9/22)	Integration of MCU and GUI subsystem (to complete by 10/06)	Final Integration (to complete by 10/20)	System Test (to complete by 11/03)	Validation (to complete by 11/10)	Demo and Report (to complete by 12/01)
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Sensors and Actuators / MCU Integration

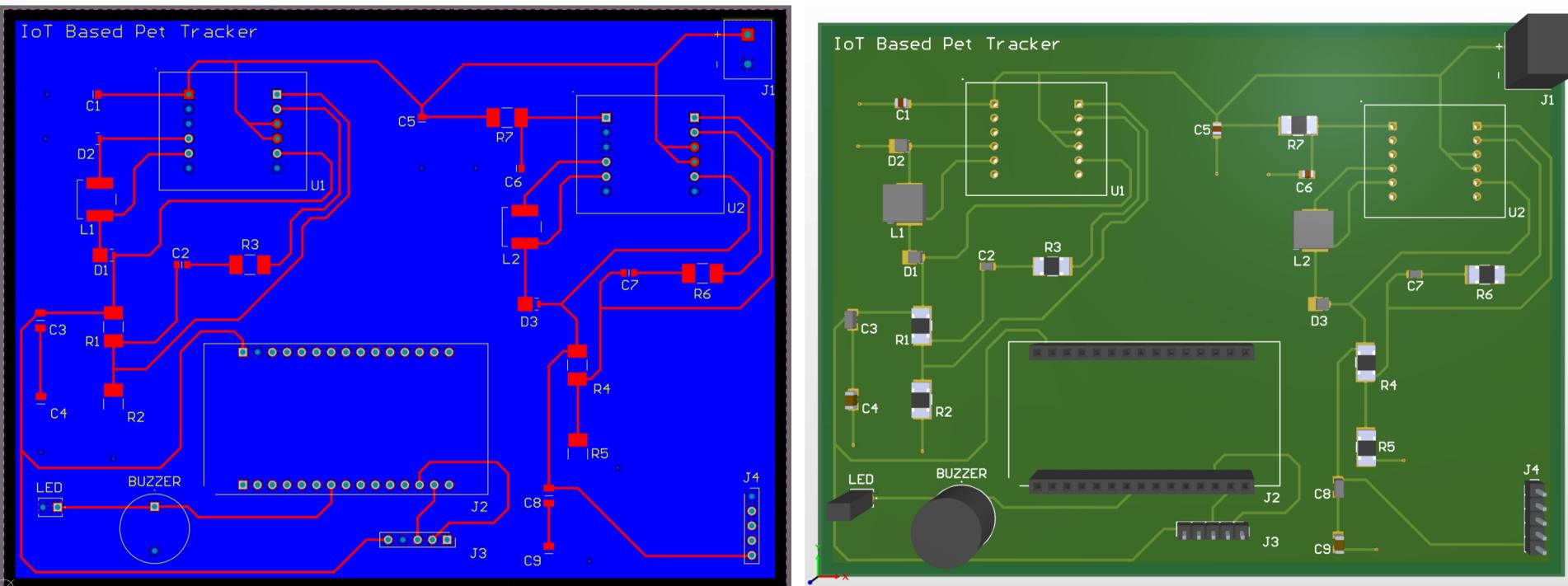
Evan Lingo

Accomplishments since last update 14 hrs of effort	Ongoing progress/problems and plans until the next presentation
<ul style="list-style-type: none">- PCB received- Basic housing unit outline	<ul style="list-style-type: none">- Solder PCB components- Full system integration testing

Sensors and Actuators / MCU Integration

Evan Lingo

- PCB received and will be ready to go for blitz
- Basic housing unit made with rough dimensions
- Moving towards full integration by end of week



MCU / GUI Integration

Richard Taylor

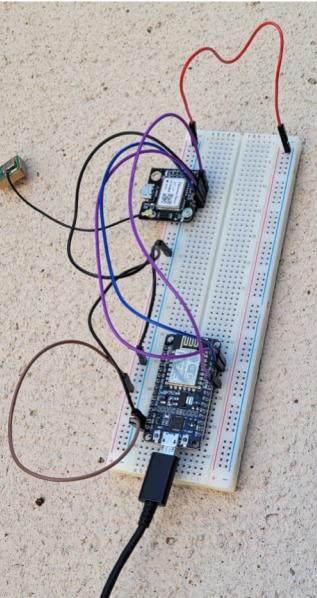
Accomplishments since last update 14 hrs of effort	Ongoing progress/problems and plans until the next presentation
<ul style="list-style-type: none">- ESP8266 being used for final integration- Code integrated with database	<ul style="list-style-type: none">- Finishing integration with GUI- Waiting on PCB completion

MCU / GUI Integration

Richard Taylor

- MCU integrated with both subsystems
- MCU code provides gps coordinates to database
- Camera provides streaming to app
- Database provides safe area restrictions and camera ip

```
└── gpstest
    └── GPRMC: "$GPRMC,215230.00,A,3037.35982,N,09620.35429,W,0.133,,181022,,A*N,0??"
```



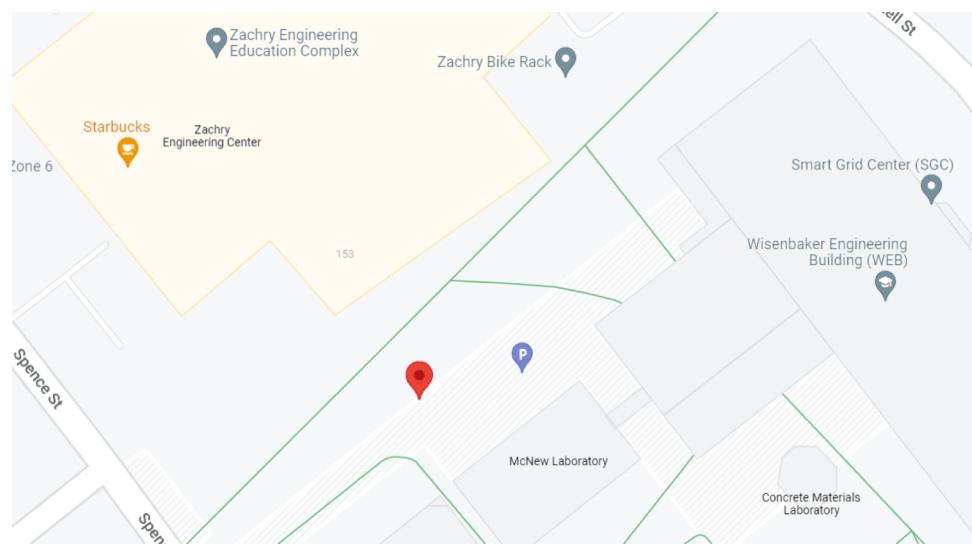
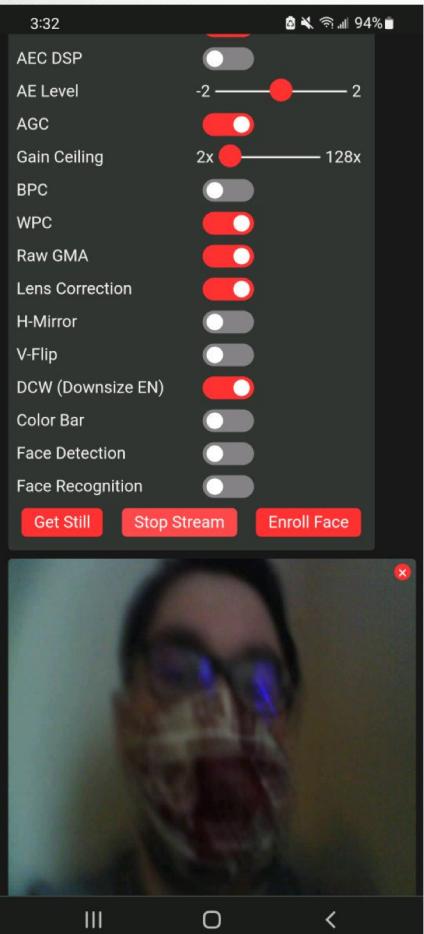
```
└── Trackers
    └── 111
        + ─────────── ──
        └── isActive: true
        └── isInGeofence: false
        └── latitude: 30.62266333333332
        └── longitude: -96.33923833333333
```





MCU / GUI Integration

Richard Taylor

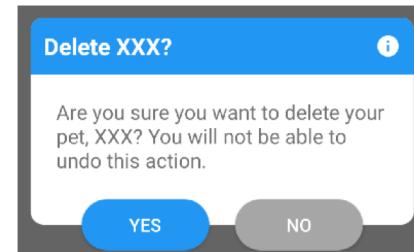
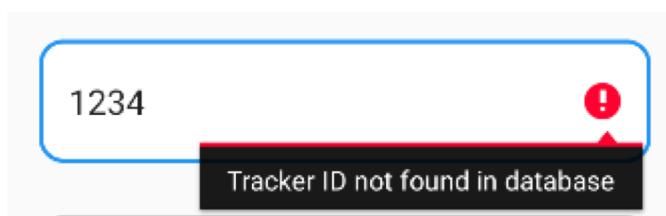


```
gpstest
  └── GPRMC: "$GPRMC,223442.00,A,3037.23450,N,09620.39500,W,0.046,,181022,,A*GN,0"?
111
  └── isActive: true
  └── isInGeofence: false
  └── latitude: 30.620575
  └── longitude: -96.33991666666667
```

GUI / MCU Integration

Amy Ideozu

Accomplishments since last update 14 hrs of effort	Ongoing progress/problems and plans until the next presentation
<ul style="list-style-type: none">- Major bug fix- Verified GPS data- Camera integration- Camera reconnection- User-friendly UI additions	<ul style="list-style-type: none">- Validation tests with MCU<ul style="list-style-type: none">- Response time, etc.- Camera UI changes- Additional features



```
23:07:07.781 -> WiFi connected
```

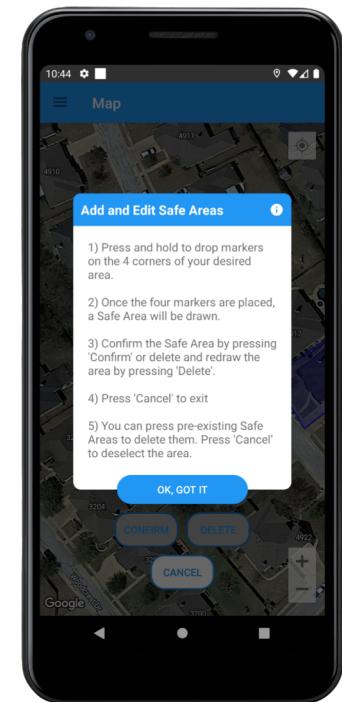
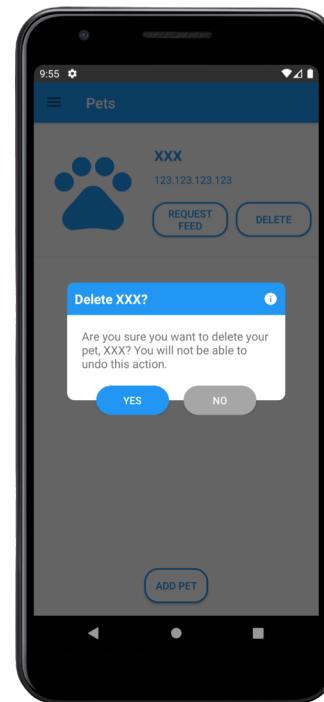
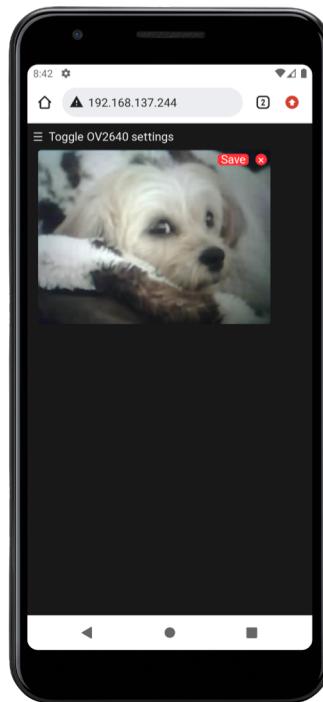
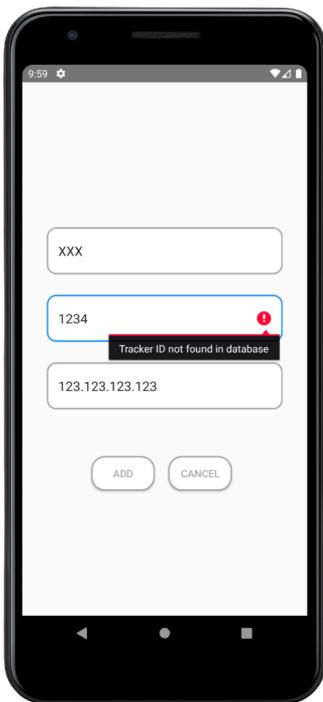
```
23:07:07.821 -> Camera Ready! Use 'http://192.168.137.244' to connect
```

```
23:07:36.473 -> Reconnecting to WiFi...
```

GUI / MCU Integration

Amy Ideozu

- GPS, Camera integration complete
- Validation tests, Camera UI changes in progress
- UI and Safe Area demo



Parts Ordering Status

Part Description	Status (order approved/order placed/part received)
PCB 1st Edition	Part Received
Microcontroller - ESP8266	Part Received
10uF Capacitor	Part Received
22uF Capacitor	Part Received
1.5nF Capacitor	Part Received
47nF Capacitor	Part Received
220uF Capacitor	Part Received
Diode	Part Received
330k Ohm Resistor	Part Received
180k Ohm Resistor	Part Received
620k Ohm Resistor	Part Received

Parts Ordering Status

Part Description	Status (order approved/order placed/part received)
200k Ohm Resistor	Part Received
15k Ohm Resistor	Part Received
1M Ohm Resistor	Part Received
4.7uH Inductor	Part Received
15 Pin Housing Connector	Part Received
5 Pin Header Connector	Part Received
Micro USB Breakout Board	Part Received
Micro USB Male-to-Male Connector	Part Received
LED	Part Received
BUZZER	Part Received
LTC3441 DFN Breakout Board	Part Received

Execution Plan

Validation Plan

Paragraph #	Test Name	Success Criteria	Methodology	Status	Responsible Engineer(s)
3.2.1.1	Battery Operating Life	Battery last for 8 hours	IPT is put in default operating state and left to run for 8 hours. Power will be monitored with connection on IPT	Not Tested	Evan Lingo
3.2.1.2	Time to Alert (GUI)	Notification sent to user's phone within one minute	Use stopwatch to measure the amount of time between pet leaving geofence/safe zone and the user being notified on their device	Tested	Amy Ideozu
3.2.1.3	Geofence Size	Geofence size is $\geq 100 \text{ sq ft}$ $\leq 3600 \text{ sq ft}$	Phone application lets user choose a geofence size with a minimum radius of 100 sqft and maximum radius of 3600 sqft	Tested	Amy Ideozu
3.2.1.4	Video Stream quality	Stream quality of 480p	Video stream from camera is broadcasted to website using program where it can be monitored	Tested	Richard Taylor
3.2.2.1	Mass of IPT	Mass of maximum 213 grams	Measure system of sensors and actuators with a digital scale	Not Tested	Evan Lingo
3.2.2.2	Size	Volume should be 1.5 inches in height, 2 inches in width, 3 inches in length	Perform measurements for the enclosure created for the IPT	Not Tested	Evan Lingo
3.2.3.1.1	Power consumption	Max 3W consumption	Perform a power up to stable test	Tested	Evan Lingo
3.2.3.2.2	Output Voltage Level	Outout voltage level of 3.3V and 5V	Line regulation and load regulation test	Tested	Evan Lingo
3.2.3.2.3	Raw Video Output	Streams video to user via ip	The video stream will be available to watch whenever the user checks the designated web ip	Tested	Richard Taylor
3.2.5.1.1	GPS Functionality	GPS module provides accurate data tracking via program	The gps program will decode the NMEA sentences and provide gps coordinates of the current location of the module	Tested	Richard Taylor

**Thank you for your time.
Questions?**