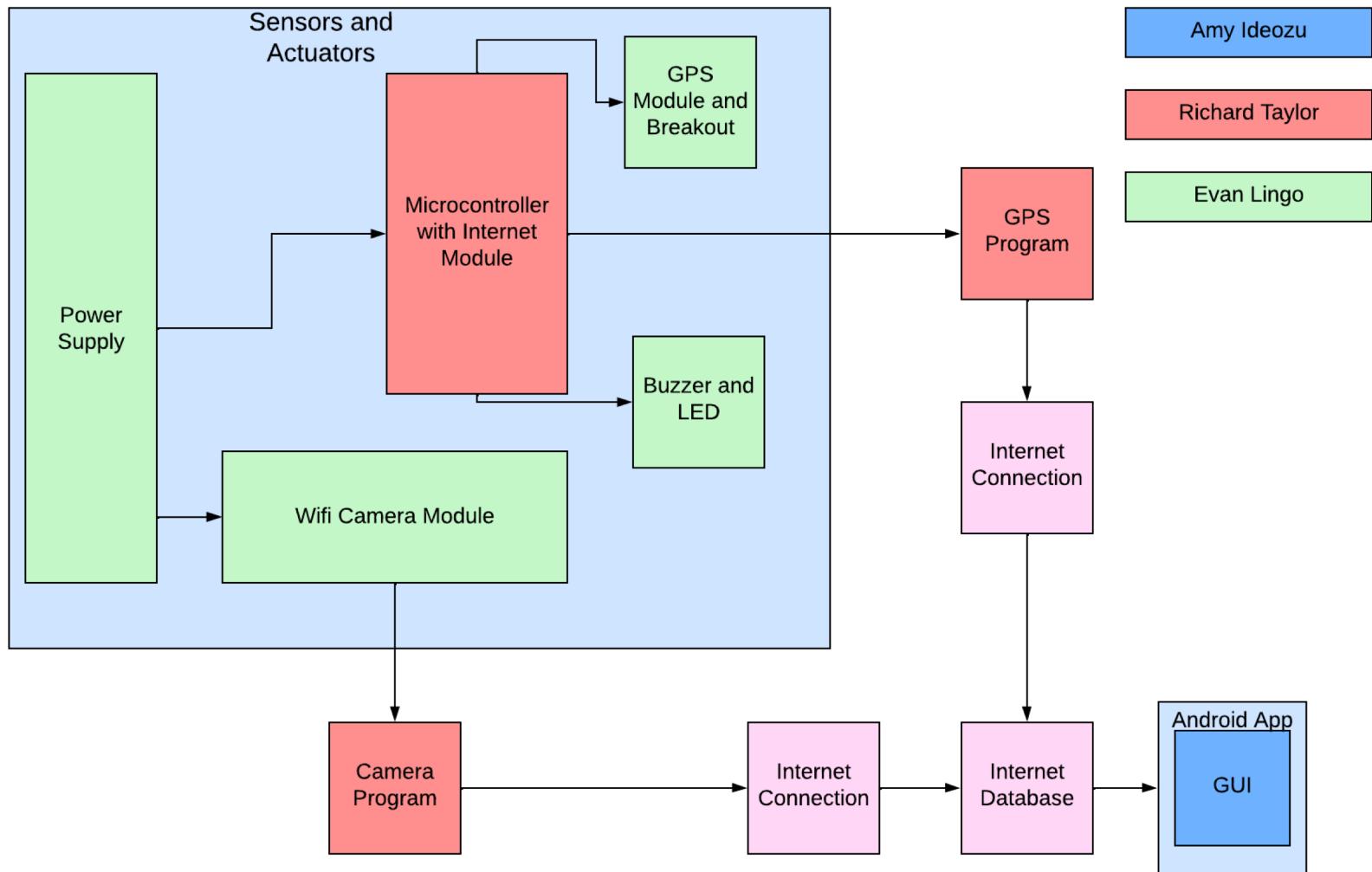


**Team 17**  
**IoT Based Pet Tracker:**  
**Amy Ideozu**  
**Evan Lingo**  
**Richard Taylor**  
**TA: Qasim Khan**  
**Sponsor: Souryendu Das**

# Block Diagram of Subsystems



# Execution Plan

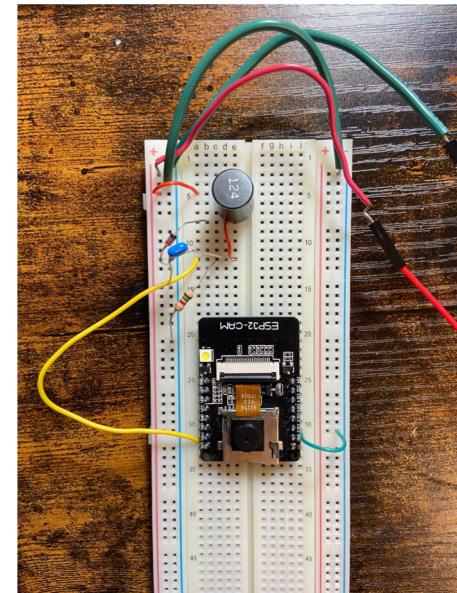
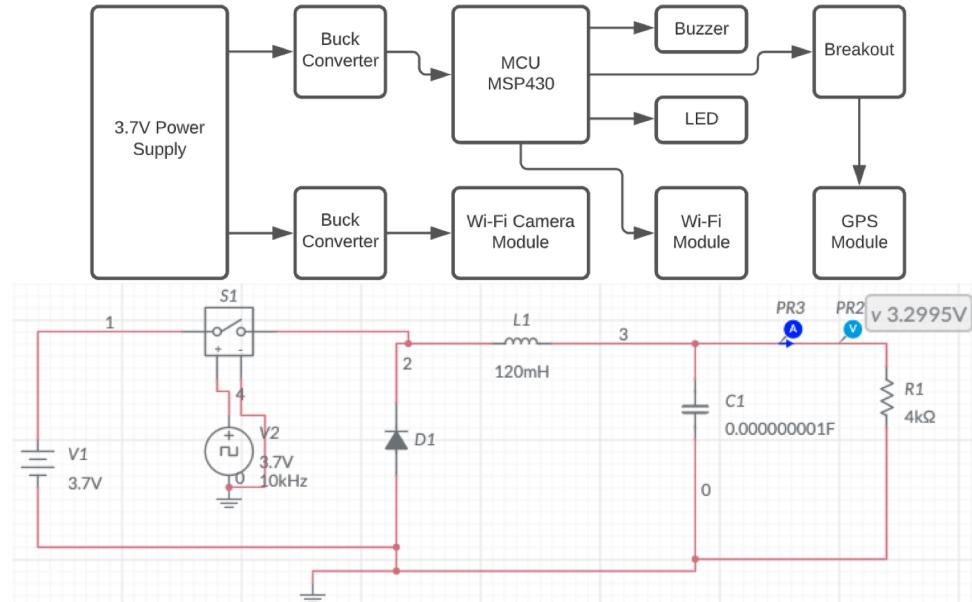
# Validation plan

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	One minute of pet exiting geofence	code will ensure the user will be notified when the pet moves out of safe zone through the gps program	Not Tested	Richard Taylor
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	Not Tested	Amy Ideozu
3.2.1.3	Geofence Size	Geofence size is >=100 sq ft <=3600 sq ft	Phone application lets user choose a geofence size with a minimum radius of 100 sqft and maximum radius of 3600 sqft	Not 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 2.12 W consumption	Perform a power up to stable test	Not Tested	Evan Lingo
3.2.3.1.2	Input Voltage Level	Input voltage level of 1.8V to 3.6 V	Line regulation and load regulation test	Not Tested	Evan Lingo
3.2.3.1.3	Data output	Sends data from MCU and MPU to database	GPS data will be transmitted between the mcu and the database to ensure the user will be able to keep track of their pet at any time	Not Tested	Richard Taylor
3.2.3.2.2	Diagnostic output	Control interface	the GPS data will be recorded so the user can know the patterns of the pet's daily and weekly activities	Not Tested	Richard Taylor
3.2.3.2.3	Raw Video Output	Streams video to users android app	The video stream will be available to watch whenever the user requests the stream on the android app	Not Tested	Richard Taylor
3.2.4.1	Thermal Heat Sinks	Thermal heat sinks on PCB to maintain a tempertaure of the whole system at 90°F ± 5%	Use of external thermometer to measure heat of IPT while active	Not Tested	Evan Lingo
3.2.5.1.1	Failure detection	Detects failure and notifies internet database	If an error occurs during the runtime of the GPS program, the user will be sent a notification via the internet database	Not Tested	Richard Taylor

# Sensors and Actuators

Evan Lingo

Accomplishments since the last presentation <b>20 hrs</b>	Ongoing progress/problems and plans until the next presentation
Multisim schematic for buck converters Working ESP32-CAM circuit with buck converter	MCU just arrived to build other buck convert and circuit Figuring out how the LED and buzzer will be activated from the GPS Constructing a perfboard



# MCU programs

Richard Taylor

Accomplishments since the last presentation <b>20 hrs</b>	Ongoing progress/problems and plans until the next presentation
Camera program completed GPS program basis formed Parts all received and ready to be used	GPS program needs to be completed



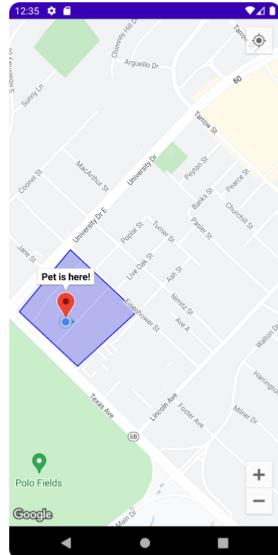
**Figure 1:** Picture from ESP32 Camera Program

# GUI Phone App

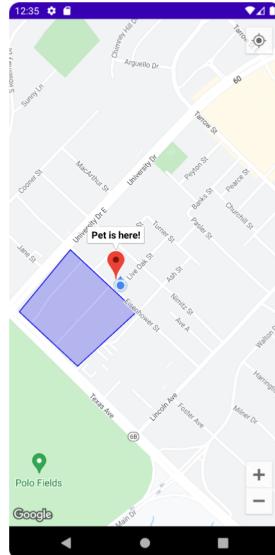
Amy Ideozu

Accomplishments since the last presentation <b>20 hrs</b>	Ongoing progress/problems and plans until the next presentation
<p>Using Polygon instead of drop pin + radius for geofence</p> <p>Using Firebase Database instead of MySQL</p> <p>Recognizes when pet is out of bounds</p>	<p>Notification system</p> <p>Add UI for geofence</p> <p>Buildings on Map</p>

**Figure 1:**  
Pet inside geofence



**Figure 2:**  
Pet outside geofence



Pet is out of bounds!