



SENIOR CITIZEN MONITOR SYSTEM

TEAM: IO-SENIOR

SPRING 2019

CLIENT: James Frenzel

SPONSOR: KENNETH CORBETT ENGINEERING






OBJECTIVE

This project aims to develop a system to help people remotely monitor an elder family member that lives alone in a non-intrusive style.




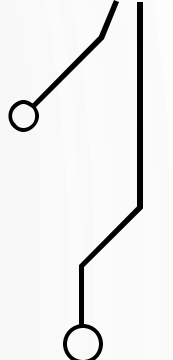
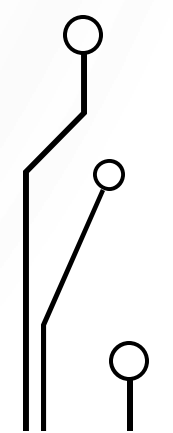
Value Proposition/Importance

Provides easy check-ins without having to physically or call, while allowing for the resident to maintain a high level of privacy.

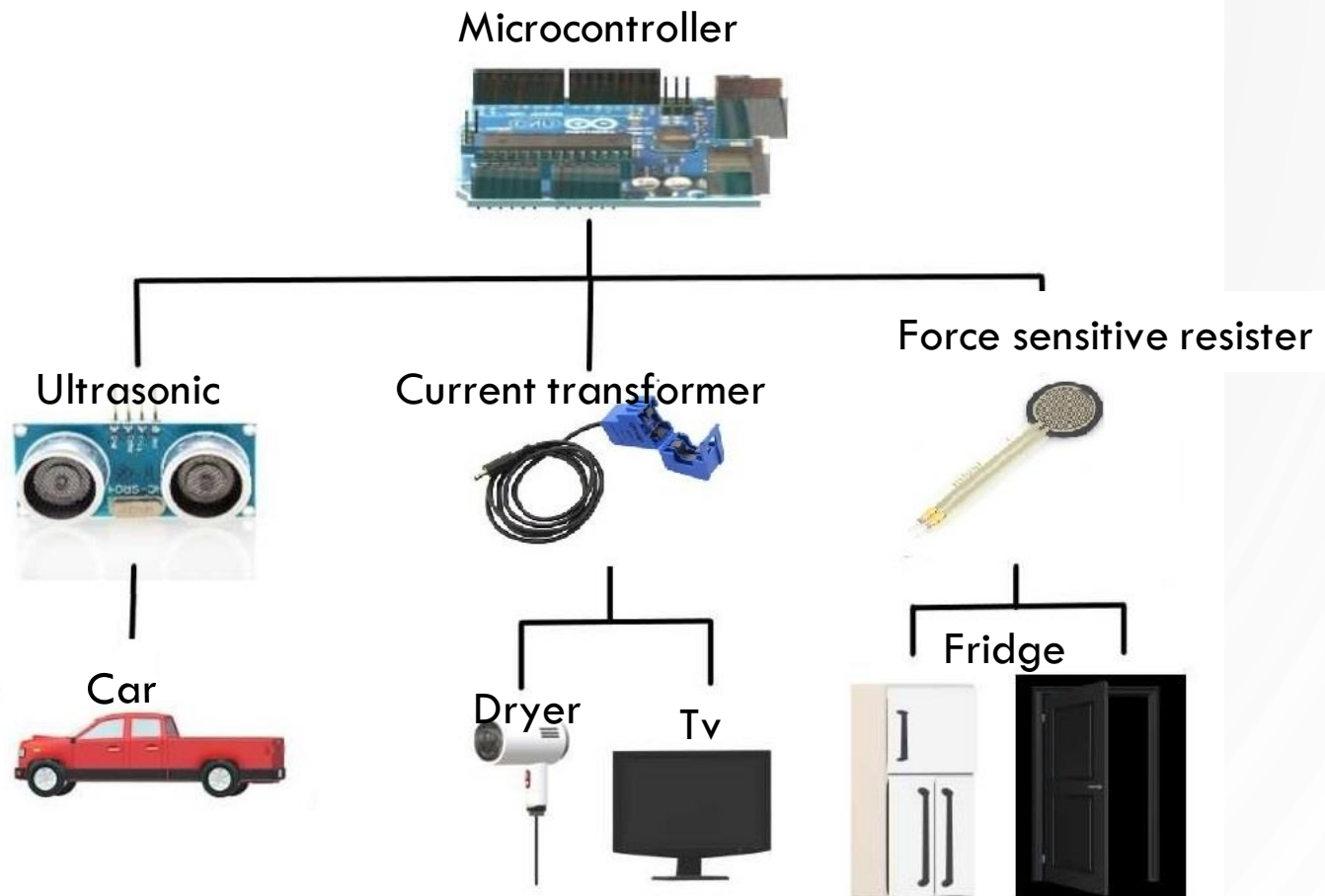




Customer Needs

- Discreet
 - Non-obtrusive
 - Low-cost (budget \leq \$500)
 - Remotely accessible data
 - Requirements
 - User should have an easy time getting to and reading data from the system.
 - No video and audio monitor, or any other types of obtrusive monitoring ways.
 - Devices should be low power or outlet supplied.
 - System should be easy to set up and configure.
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OVERALL CONCEPT



POTENTIAL RISKS/ISSUES

Part	Action	Risk	Potential Solution
nRF	Wireless Communication	No connection/Crash code	Add in a restart function
Battery/Power	Power the system	Loss of power	Battery check/Outlet supplied
System	Security	Breach	Password
System	Reliability	Crash	Restart system

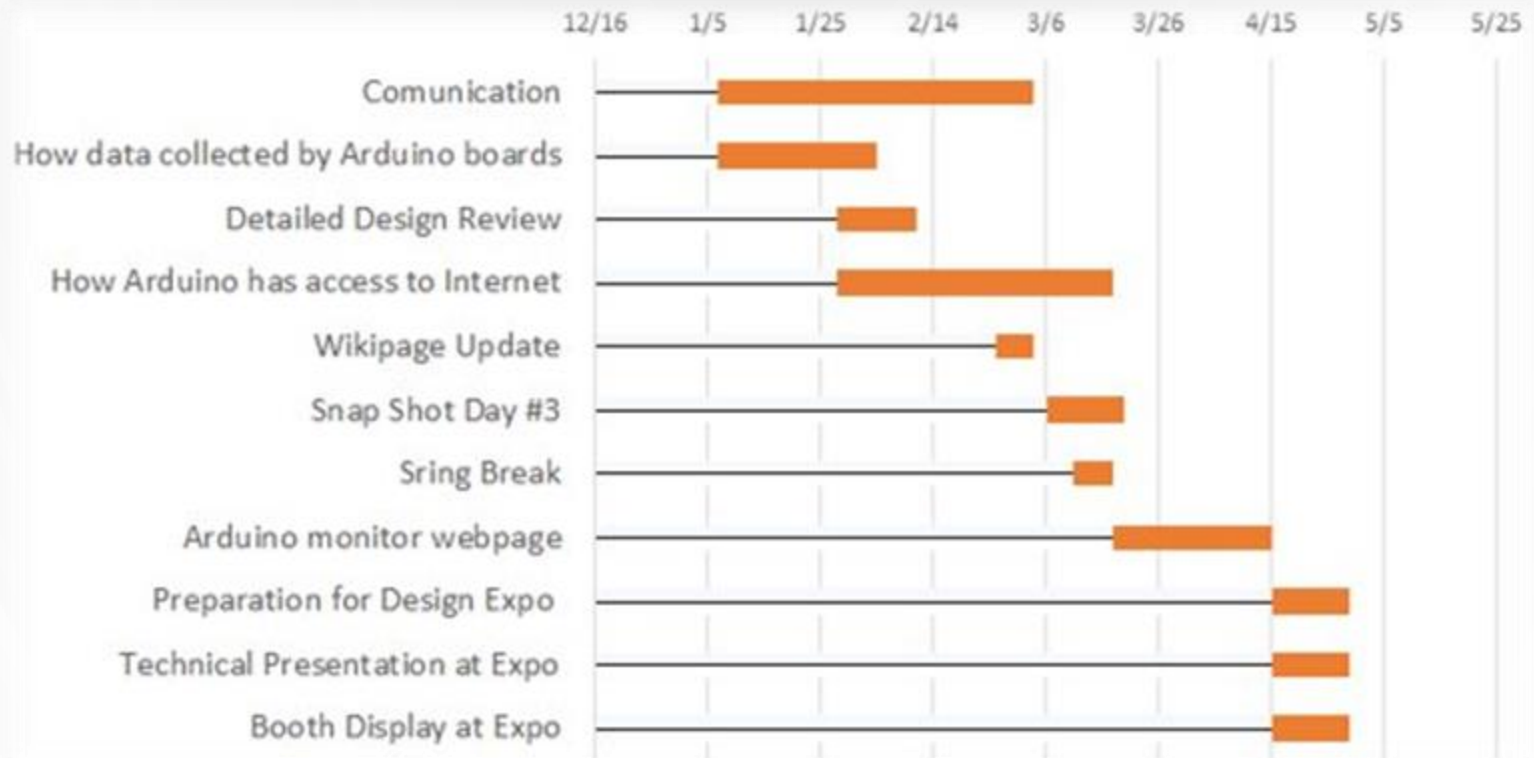
BUDGET

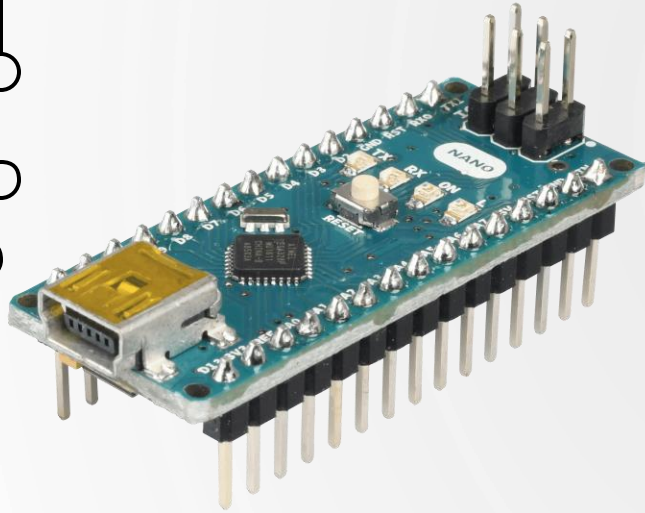
Item	Quantity	Individual Cost	Cost Total
Arduino Nano	2	22	44
Jumper Wires	2	1.95	3.9
Current Transformer	1	8.3	8.3
FSR	2	9.1	18.2
NRF24L01 x10	1	12	12
Breakout adapter x4	2	9	18
Ethernet Shield	1	16	16
Total	-	-	120.4
Budget	-	-	500
Remaining	-	-	379.6

• Items not accounted for but have

- Ultrasonic
- Arduino Uno
- Bread boards
- Measuring devices
 - Oscilloscope
 - Multimeters

TEAM SCHEDULE





MICROCONTROLLERS

Nano

- Small, battery powered
- Used for sensor nodes

Uno

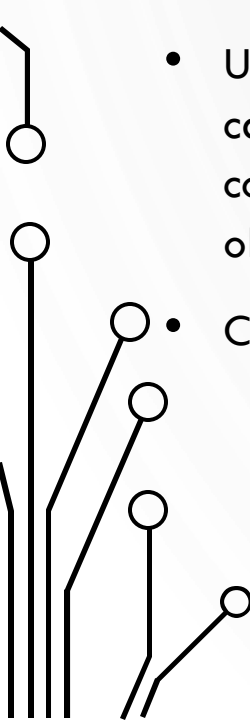
- Receives node data
- Publishes to internet





SENSORS


ULTRASONIC

- Uses sound to measure distance
 - Useful for detecting cars and other commonly placed objects
 - Cheap
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CURRENT TRANSFORMER

- Obtain data on whether the domestic electrical appliance is operating or not.
- Can handle large current even in-house usage.

FSR

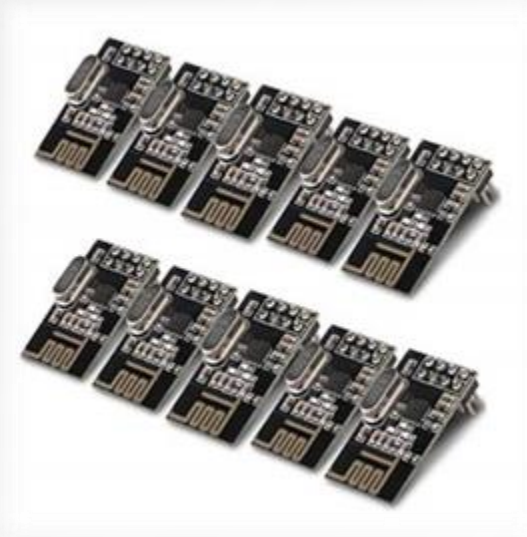
- Measure the force to check whether the door is open or closed
 - It is quite sensitive so the result of checking is accurate
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COMMUNICATION OPTIONS FOR CONNECTING DEVICES

Ethernet Shield



RF Transceiver



Sensor Data is collected by Nanos then logged on a base station for remote access