

## Project Block breakdown

### Baby Detection

Developed a baby detection system using a thin film pressure sensor

### Temperature Reading

Designed a temperature sensing system to detect temperature changes in vehicles

### Phone Application

Indicate the presence of the baby, the status of the latch, the temperature inside the vehicle, and the distance from the baby.

### PCB

Interface between the microcontroller, power supply and all other sensor connections

### Latch Detection

This detection is done by using hall effect sensors that interact with magnets that are placed on the back of the carseat.

### Main Enclosure

3D printed case that houses the main systems components with removable connection points for sensors.

### Bluetooth Alerting Device

This device will be communicating with the main base Bluetooth module using the Arduino Nano RP2040.

### Dongle enclosure

A 3D printed enclosure with the ability to show LEDs and haptic feedback motion. Able to attach to a set of key chains.

### Dongle PCB

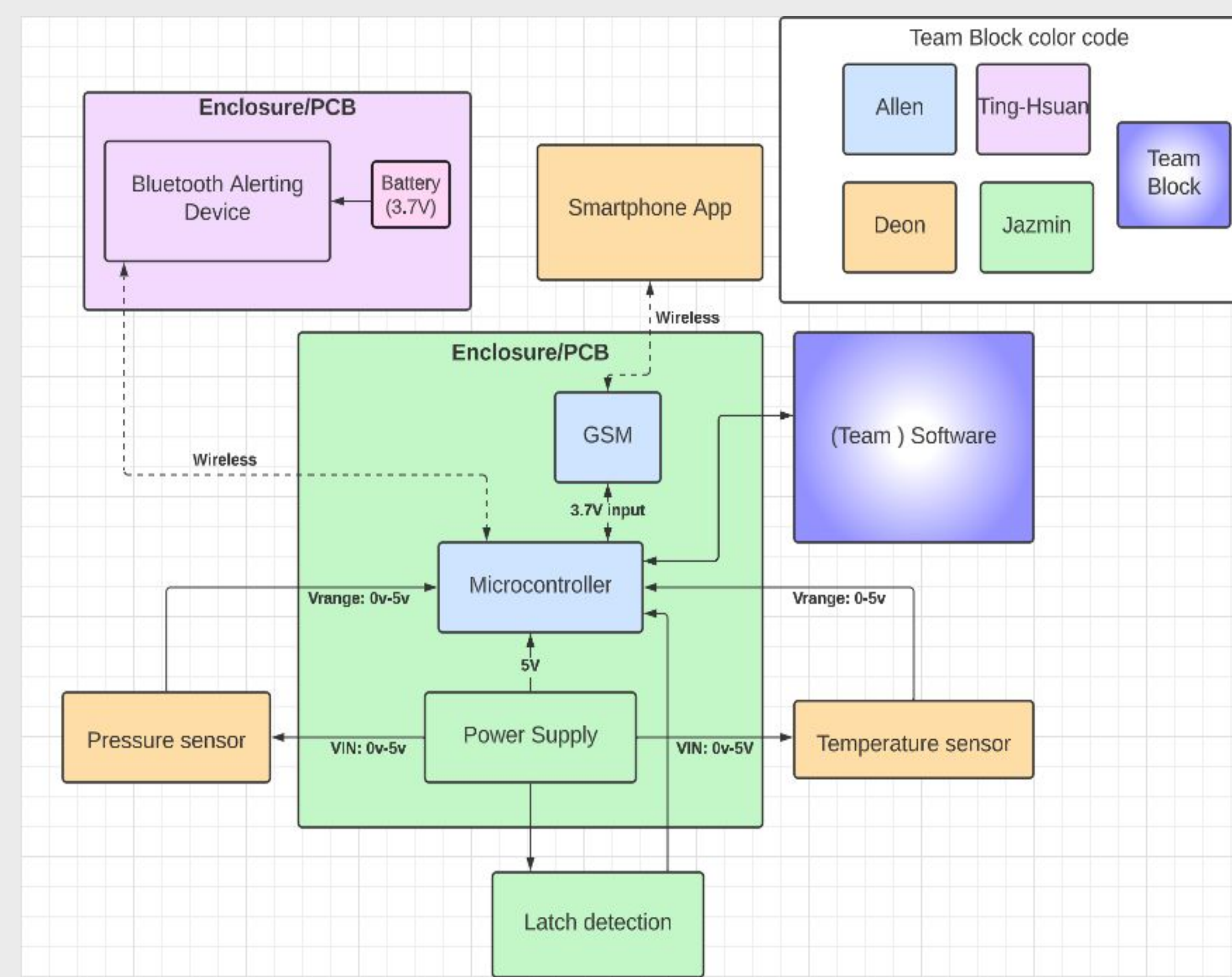
This PCB design offers two modes - battery charging and power supply.

### GSM/LTE Board

The GSM board offers the system communication to the internet through 4G LTE network.

# Seat Check: IoT car seat

Parents and caregivers monitor your infant in the car. Get alerted by keychain device and phone application.



## Engineering Requirements

Baby detection

Car ambient temperature detection

Distance tracker

Enclosure Size

Latch detection

Phone App

Rechargeable system

Wireless dongle

## Project Overview:

The project uses IoT and sensor information to determine the safety of a child in a car seat. This is done by detecting the presence of a child using pressure sensors, the interior temperature of the vehicle using temperature sensors, location tracking with a GPS device, and a Hall Effect sensor to determine if the latch is correctly seated. This information is then displayed on a mobile phone application. We also provide a method of receiving some information with a bluetooth dongle.



## Team Member



Jazmin Cartagena

- Mother of 2 children
- BS in ECE with a Minor in CS
- Graduation August 2023

## Sharon Chen

- BS in ECE
- C/C++ programming, Python, AutoCAD, Solid work, Blender, Rhino
- Ardupilot, Circuit Design, SystemVerilog, Modelsim
- Expect Graduate: June 2023



## Deon Lofton

- EE & Minor CS
- Machine Learning, Machine Vision, Sensor Integration, Circuit Design, Software and Phone App Design
- System Verilog, LTSpice, ModelSim, C, C++, and Python
- Graduation June 2023



## Allen Lee

- BS in ECE
- Sensor integration, Circuit design, Avionics.
- Microcontroller including Arduino, Raspberrypi, ESP32.
- AutoCAD, Fusion 360, 3D printing technology
- Graduation Fall 2024

