TEXAS STATE
INGRAM SCHOOL OF ENGINEERING

E2.04 – Urban Hotspots

Chandler Harrison, Eddie Armeriv, Adarsh Ram

Urban Hotspots

Meet the Team

Chandler Harrison   Adarsh Ram   Eddie Armeriv

Project Background

- Texas State University's Health and Human Performance-Recreation Studies and the Ingram School of Engineering have collaborated to create a sensor that integrates with data visualization platforms, producing high-resolution urban heat maps.
- These advanced heat maps assist city governments in planning effective heat mitigation strategies, especially in developing tree-rich green spaces to enhance urban cooling.
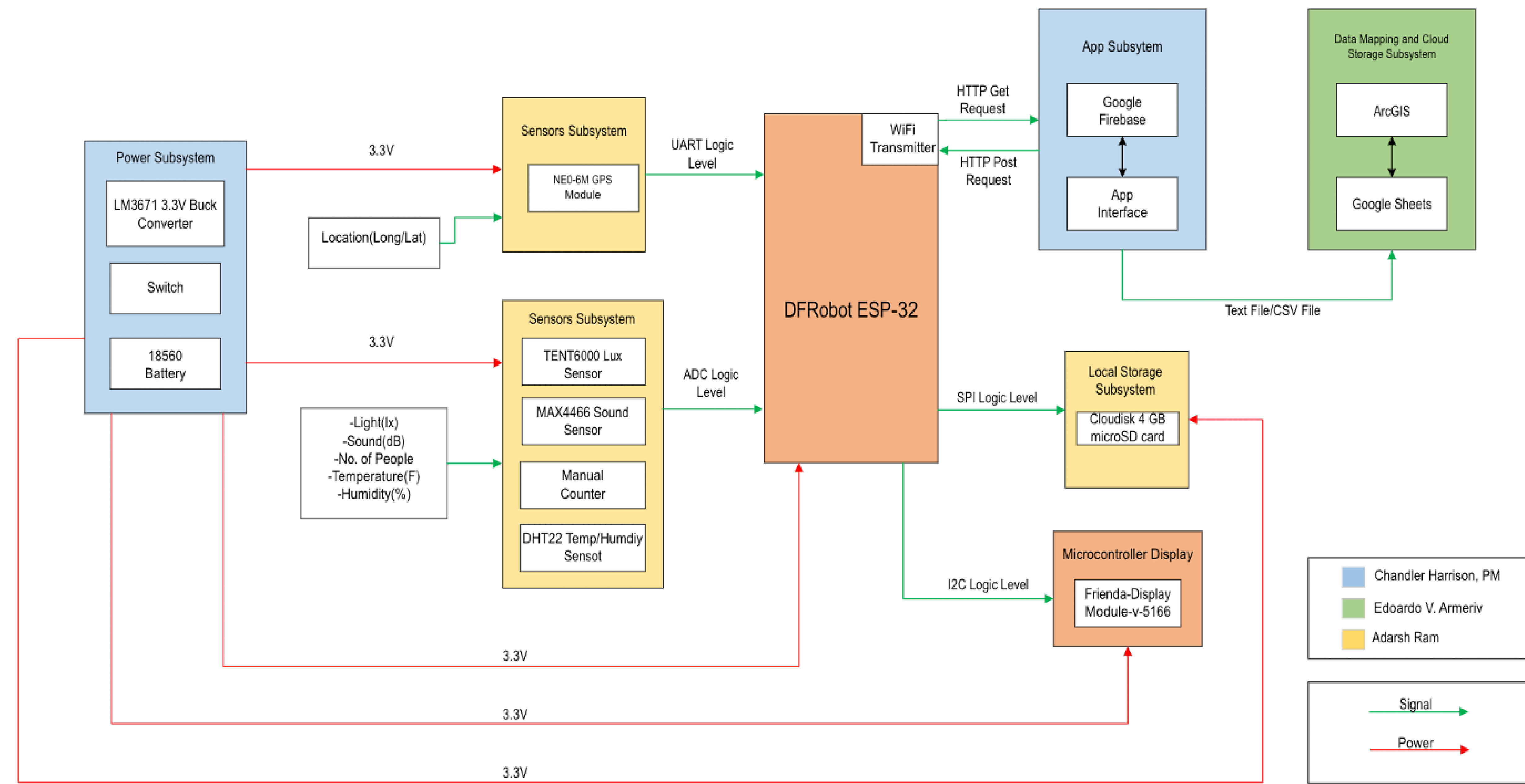
Design Considerations

- **Different crowd mapping methods**
  - Millimeter-Wave Sensor
  - Bluetooth Scanner
  - Google-Ways Device Counting
- **More precise Light and Sound sensors**
  - Stronger Light Sensor
  - **Stronger Sound Sensor**

Enclosure Results

Test	Expected	Results
Drop Test	Remain functional after being dropped 5' onto hard surface	Passed
Water Res Test	Fully functional after 3 showerings of water	Failed

Overall Block Diagram

Hardware Results

Temperature Test Results (F)

Light Test Results (Lux)

Long vs. GPS Long

Humidity Test Results (F)

Sound Test Results (dB)

Lat vs. GPS Lat

Design Features

- Logs time, location, sound, light, temperature, humidity, and people
- Display data on Arc GIS and Google Sheets
- Maintain a battery life of 8.34 hours per day
- Display battery life, temperature, humidity, and time on an LCD screen,
- Saves data on a 4 GB micro-SD card
- Communicates with Mobile app in real-time
- Mobile app plots data using Google Maps

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- Advisor: Mr. Stevens

Battery Results

Test	Required	Result
Average Measured Current(Worst-Case)	540mA	529.83mA
Average Battery Life	4h	8.39h
Average Onboard Charging Time	24h	8.52h
Average Offboard Charging Time	8h	4.88h

OLED Display