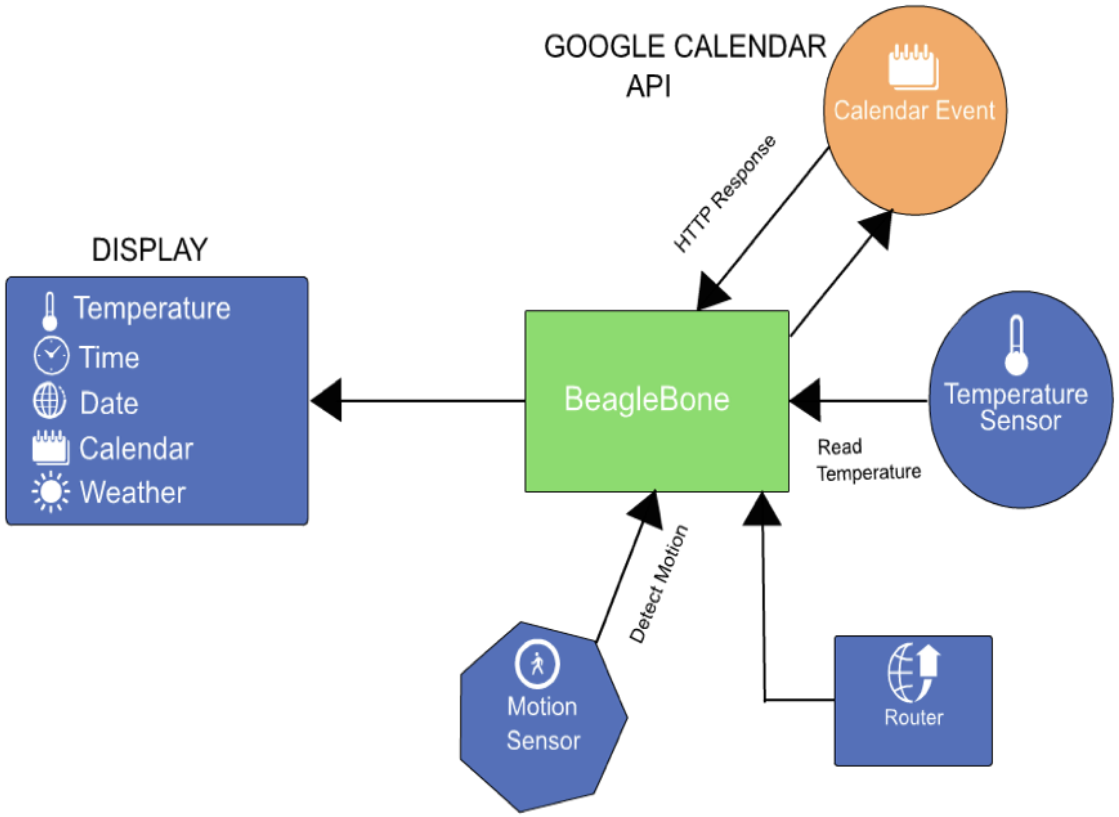
Project Overview:

The project is a motion-activated LCD Smart Mirror, that displays real-time weather, current date and time, and a calendar that is directly read from the Google calendar through the Google calendar API. It also consists of a temperature sensor to monitor the room temperature and calculates the average temperature every 30 seconds. It also displays an alert message on the LCD every half an hour when the temperature crosses a certain threshold. The project connects to the Internet by connecting to the user's home Wi-Fi network.

Project Design Overview:



Hardware and Software Requirements:

The idea is to develop the whole of the project using C on the Debian Linux operating system. And also use the Google Calendar API to get calendar information.

- **Hardware:**
    - BeagleBone Black
    - SSD1306 OLED Display
    - PIR Motion Sensor
    - Temperature Sensor

- **Software:**
    - C Programming language
    - Debian Linux operating system
    - Google Calendar/Calendar API
    - PuTTY

Working:

- First, we display the current date and time on the LED display.
- We use the Google Calendar API to read an individual's calendar and display his events on the LED display.
- We work on displaying the temperature to the user every 30 minutes. Every 30 minutes we check for the average temperature and if the temperature required is not met display an alert to the user on the LED display.
- We also plan on implementing a voice-based system for the mirror. Even when the user is not present in front of the camera but gives a voice command the mirror display turns on and displays the calendar events.
- Currently working on getting the individual components of the project working and also using other languages to understand these components better and the beagle bone better. Following this integrating the project with all the required components and also converting any code to C programming language.

Future Implementation:

Instead of designing a smart mirror for a single person as we display the same calendar events to anyone who comes in front of the mirror, we could design an ML model to identify an individual who is in front of the mirror and display the respective calendar events. This involves the development of a face recognition model, which we would consider as a future implementation for our project.

References:

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4. http://deeplyembedded.org/ssd1306-oled-driver-beaglebone/
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