

Milestone 2 Report for CMPT433 Project

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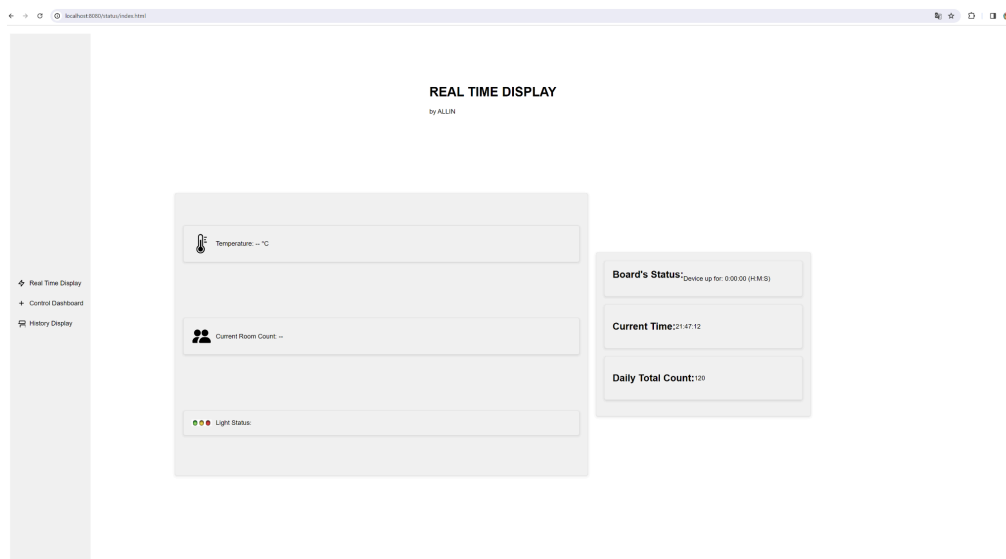
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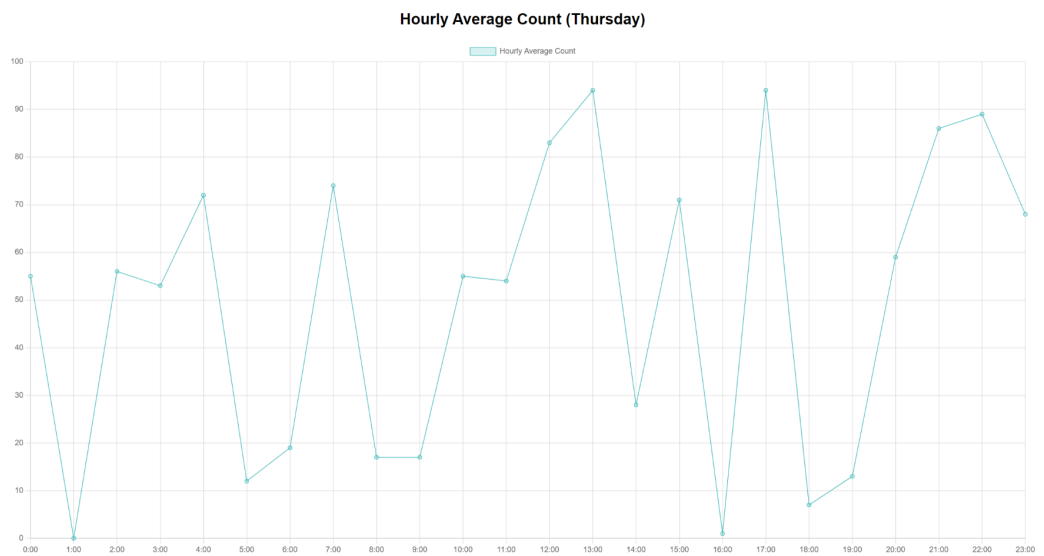
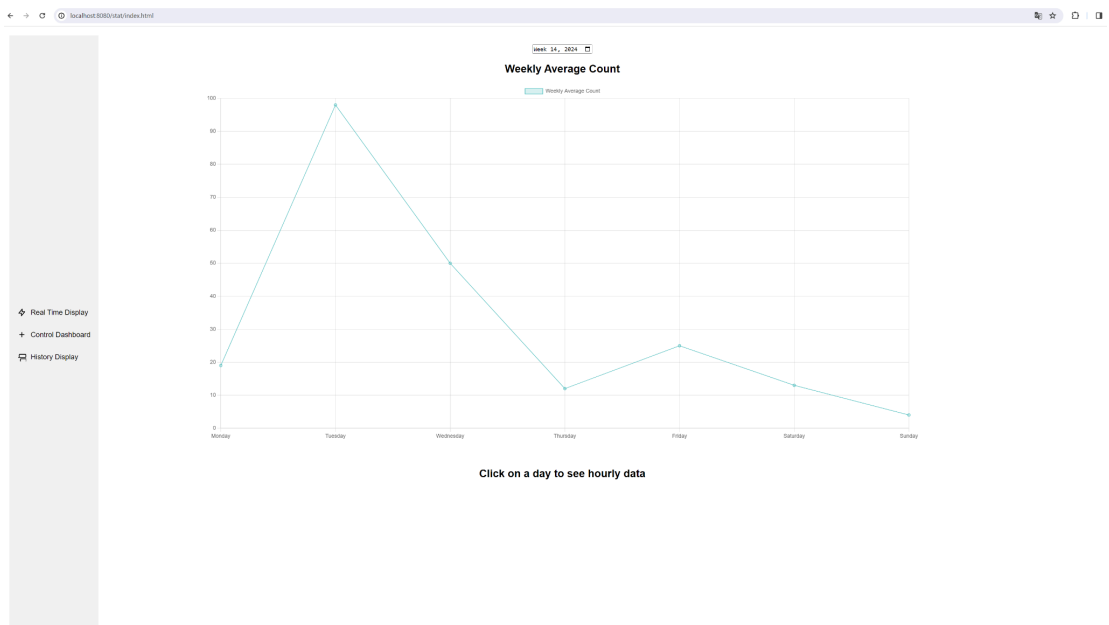
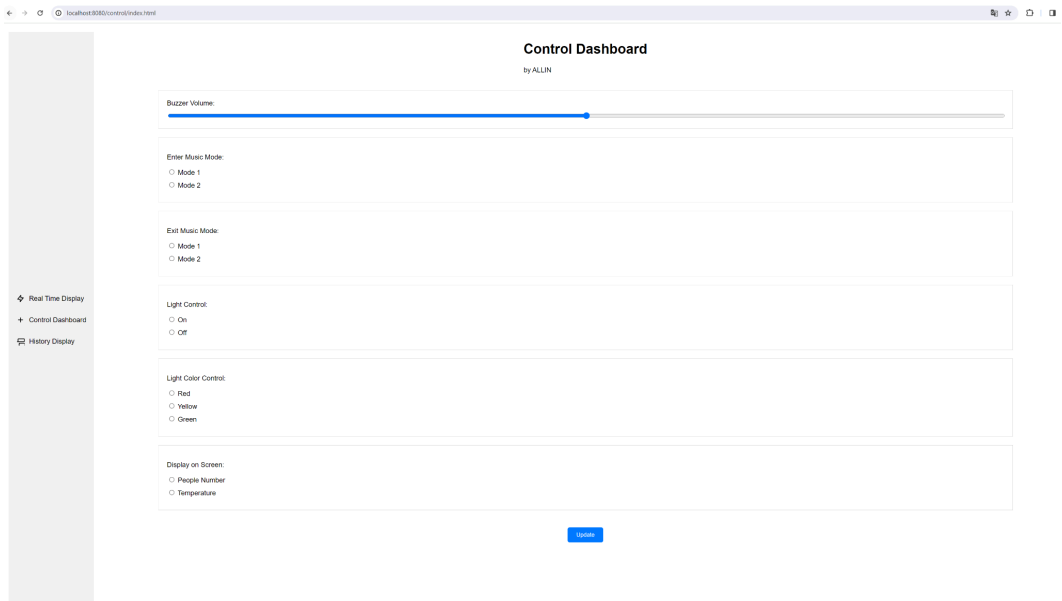
Project Overview:

Our project aims to create a system for monitoring and analyzing customer traffic at the entrance to a store. The system uses a combination of hardware and software to analyze and enhance user experience, providing store owners with daily traffic data while also increasing the customer experience when entering and exiting the store.

Accomplishments Provements

- Front website construction completed (zip file)
 - We have completed the construction of all functions of the website, including real-time display page, control page and page for viewing detailed people flow data. And we have negotiated the message passing protocol used by our group for UDP. There is currently no interaction with the back-end C language, because the back-end functions are still under development, and this is basically the prototype of the website. All data shown below is random.





- Entering and exiting the store of counting completed. (Vedio)
 - We have tried various combinations of lasers, motion sensors, and photoresistors to find the most suitable count for counting the number of people entering and exiting the store. Finally, after three attempts, we found that if we want to accurately count the number of people entering and exiting, we can only pass through two doors. If there is only one door, that is, people entering and exiting pass through one door at the same time, it will lead to too many uncontrollable results, and the reality is often more complicated, which ultimately leads to inaccurate counting. So we plan to use the motion sensor to control this door and only allow entry to that door. Another laser pointer and photoresistor detect another door, which only allows exit. This will solve the problem. Since the measurement angle of the motion sensor is relatively large and may be inaccurate when there are multiple people passing by, we considered using angles and obstructions to achieve the desired effect, which is currently in the debugging stage. More explanation via youtube video (<https://www.youtube.com/watch?v=QCK37GPeBEM>)

- Music playback, screen display design and The status of the light (red, blue, green) shows the capacity. (PDF and vedio)
 - In order to enhance the user experience, we have set up the music playback function of audio. Every time a user passes through the entrance door and is detected by motion, we will play special welcome music. Every time a user passes through the exit door and is detected by the laser, we will play farewell music. In addition, we have designed how to assign letters and find the specific address on the 8 * 8 matrix screen. In addition, we plan to use PRU to show the status display function of red, green and blue lights. Design drawings and other more features can be viewed by referring to our design PDF and more explanation on youtube video. (<https://www.youtube.com/watch?v=QCK37GPeBEM>)

Unexpected Challenges

- Motion Sensor

At the outset of our project, we envisioned leveraging motion sensors to detect human presence and track changes in distance. However, as of now, we have yet to successfully implement the distance testing functionality. Additionally, given that motion sensors operate within a 120-degree angle and 6m radius, it is critical to accurately place and create barriers to ensure that motion is detected at a fixed angle to measure whether someone is passing by rather than measuring distance.
- Temperature Sensor

In our project, we aim to achieve real-time monitoring of environmental temperature changes via a web page interface. However, due to ongoing research and limited familiarity with the hardware, we have yet to successfully establish a connection

between the BeagleBone Green and the temperature sensor using the I2C protocol to retrieve data. Further exploration and experimentation are required to overcome this obstacle and attain our project objectives effectively.

Differences between what has been accomplished and the plan

Overall, the project is more than half way through, and the most important functions have been completed. There are still a few functions left. 1. The 8 * 8 screen displays and status light displays have been designed, and we have ideas. It is expected that they will be completed soon. 2: The temperature sensor progress is unexpected, we hope to ask for advice in TA hour. 3: The front-end of the website has been completely completed, just waiting for the connection and status update of the back-end UDP. The database is intended to use a local database to store data. So far, the progress is as expected. It is planned to solve the temperature sensor and screen problems in the next week. Then use UDP to communicate between the web backend and the frontend, update the data in real time and save it to the local database.