Population Tracking for Covid

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SAC STATE

PROBLEM STATEMENT

Reduce the spread of Covid by monitoring symptoms and human movement patterns through a device with various sensors. This is a response to the rise of deaths and cases around the world (shown in Figure 1) which has been caused, at least to some degree, by a lack of safety measures during the reopening of stores and businesses during Covid.
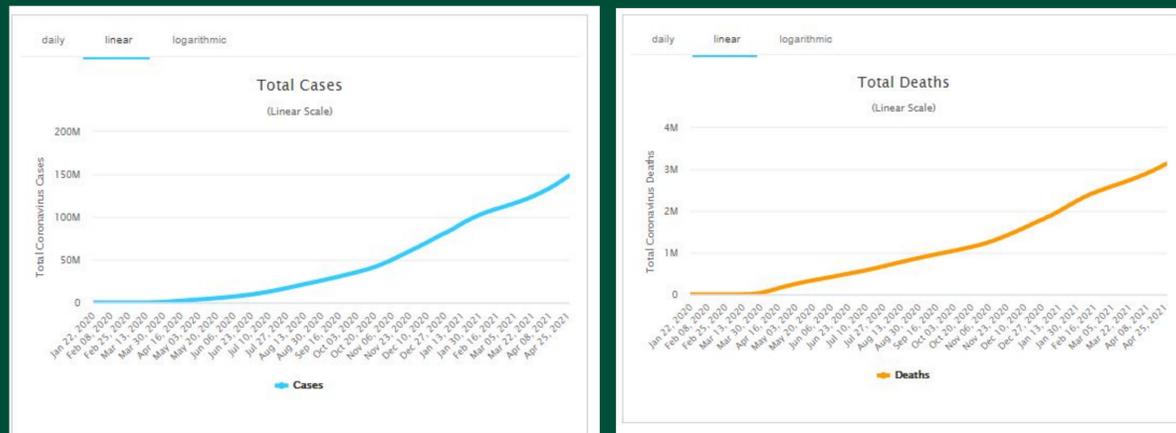
Figure 1: Images taken from Worldometer, a well credited online resource, that shows the cases and deaths in the world since January 2020 [1]

BACKGROUND

Our design of our project is a system of devices that are integrated together to create one complete system. Our project is meant to be placed in stores or businesses, near the entrance, in which it can operate autonomously. It will detect people as they enter the store and alert the user to step to the infrared sensor in which they will measure their temperature to make sure that the person does not have a fever, a common Covid symptom. If the temperature is in a safe region the user will be notified and the person will be allowed to enter the store. All temperature measurements and store capacity will be stored to a cloud to be analyzed.

SUMMARY OF WORK

We used an infrared sensor as seen in figure 2 to measure people's temperature to make sure people entering do not have a fever, a common Covid symptom. Next, we used a camera in figure 3 to detect people as they enter the store to alert our system as well as keep a person count to determine capacity. In addition, the data from both the infrared sensor and camera is sent to a cloud shown in figure 4 where the data can be store d and analyzed. Figure 5 shows the full system implementation where the alert user system is shown as well as the physical structure.

Figure 2: D6-32L Infrared Sensor [2]

Figure 3: Jelly Comb 1080p Webcam [3]
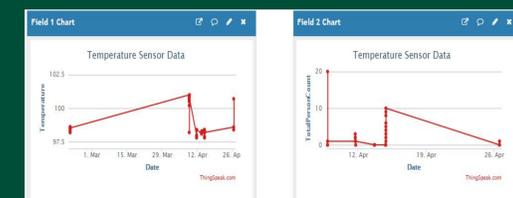
Figure 4: Thingspeak cloud server where data is stored [4]

IMPACT ON COMMUNITY

- Businesses can better prevent the spread of Covid

- Businesses can change store policies through the information gathered

- People can feel safer to go to businesses amidst a pandemic

- The decline of Covid if this system is implemented on a large scale

Sources Cited:
[1] "Covid World Wide Statistics" https://www.worldometers.info/coronavirus/ (accessed 4/27/21)
[2] "Picture of Infrared Sensor" taken by team member Paul Dye (accessed 4/27/21)
[3] "Jelly Comb Webcam"
https://www.jellycomb.com/blogs/media-reviews/jelly-comb-computer-usb-webcam-1080p(accessed 4/27/21)
[4] "Data output" Taken from personal cloud server by team member Paul Dye (accessed 4/27/21)