Woodland Watcher

Constant Forest Observation

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PROBLEM STATEMENT

Despite efforts made by CAL Fire, Wildfires have been increasing in frequency, intensity, and seasonal duration. The goal behind the Woodland Watcher is to provide forested areas with constant observation by monitoring smoke and temperature at each "Post."
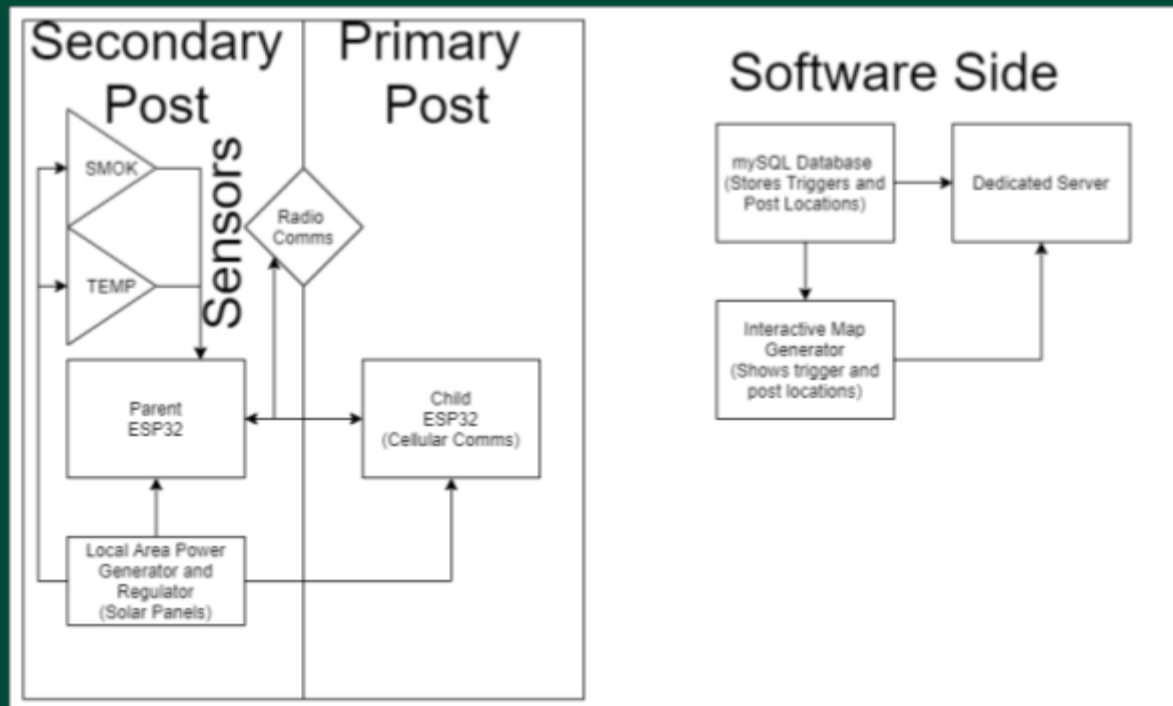

Figure 1: Abstract block diagram of project

BACKGROUND

The damage of wildfires every year is devastating, often exceeding several billions of dollars in property damage, and destroying hundreds of thousands of acres of forest. These wildfires also cause a significant increase of negative health impacts on people living in the surrounding areas. The potential damage caused by these fires can take years to recuperate the damages to the wildlife, forests, and locals that live nearby.

SUMMARY OF WORK

The secondary device will consist of a esp32 microcontroller with a temperature detector, smoke detector, solar panels, and lithium-ion batteries to keep the device charged. When smoke is detected in the area or the temperature increases at a fast rate, the sensors will trigger sending that information to the microcontroller. That information will be passed along the grid of devices until it reaches the Primary device. The primary device will send that information to a cellular communication tower to be stored in a database and to alert authorities of the sensor triggered. The device will have an ID and geographical location that can be referenced on the map to know exactly where the trigger alert was detected.
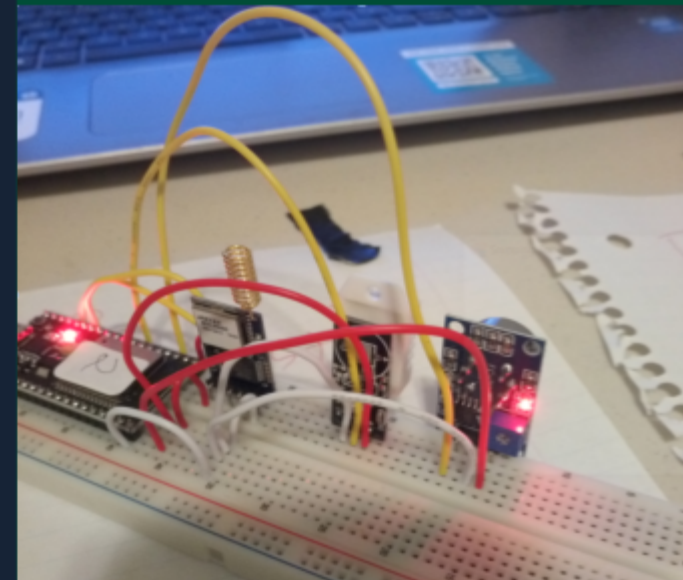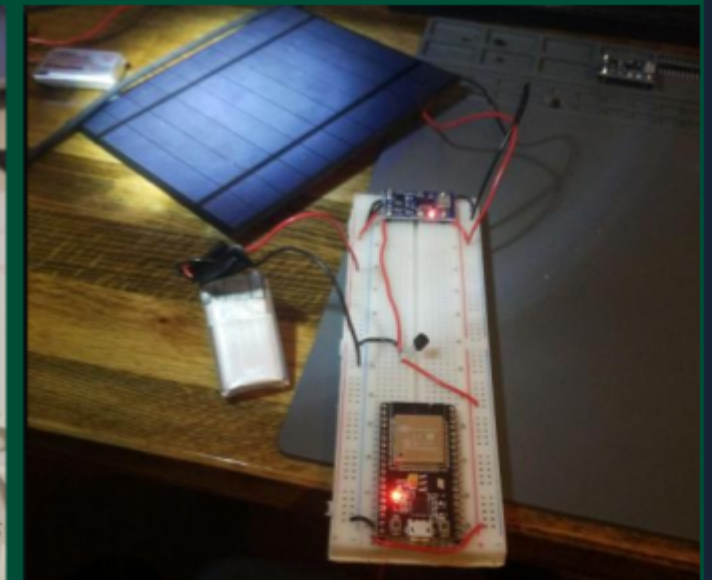

Figure 2: Post assembled on breadboard   *Figure 3: Post powered by battery and solar*

Impact on Community

An early warning system has the potential to reduce property damage, negate impacts on physical health, and stop the loss of life. By providing firefighters with early warnings of fires in forested areas, they can stop the fires before they grow out of control.