

Woodland Watcher

Constant Forest Observation

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PROBLEM STATEMENT

Despite efforts made by First responders, 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."

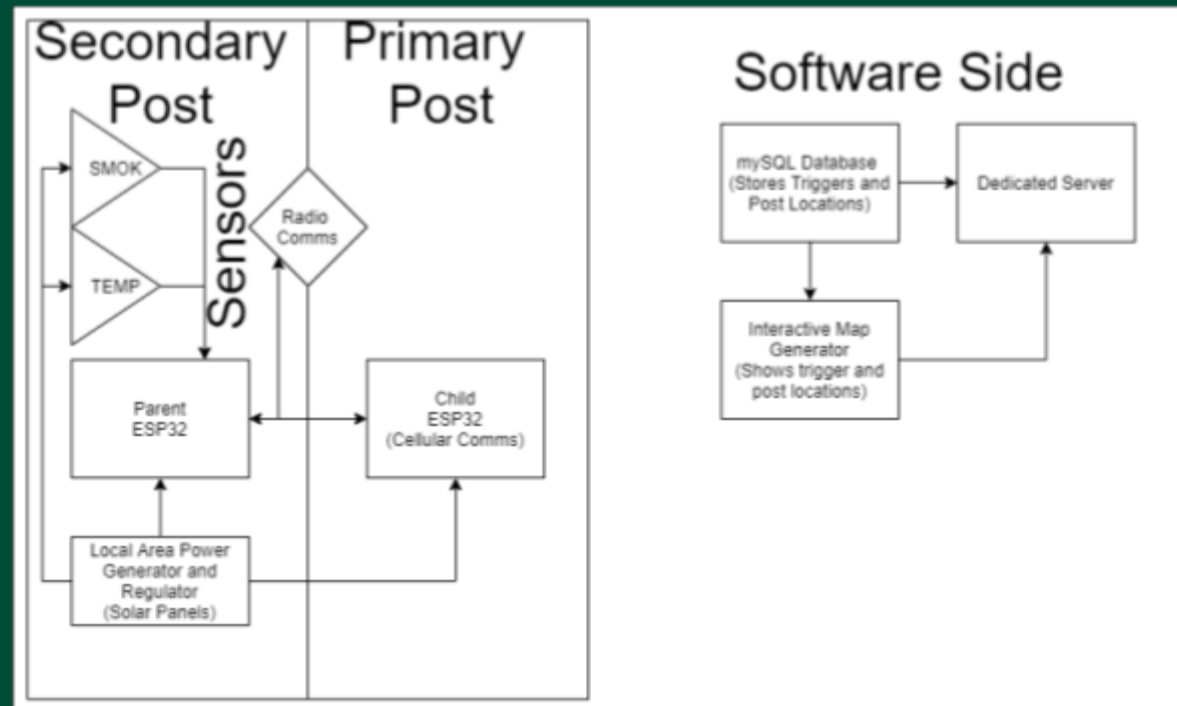


Figure 1: Abstract block diagram of project

PITCH

An interconnected grid of microcontrollers equipped with smoke and temperature detectors with radio-communication used for early wildfire detection.

SUMMARY OF WORK

The Secondary Post consists 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, the temperature increases above 170 or at a rate of 12 degrees Fahrenheit per 60 seconds, the post will trigger, sending that information to the next post (Primary or Secondary). That information will be passed along the grid of devices until it reaches the Primary Post. The Primary Post will send that information to a cellular communication tower and it will then be stored in a database. This will alert authorities of the post that triggered and the location of a potential wildfire. The device will have an ID and geographical location that can be referenced on the map to know exactly where the trigger was detected.

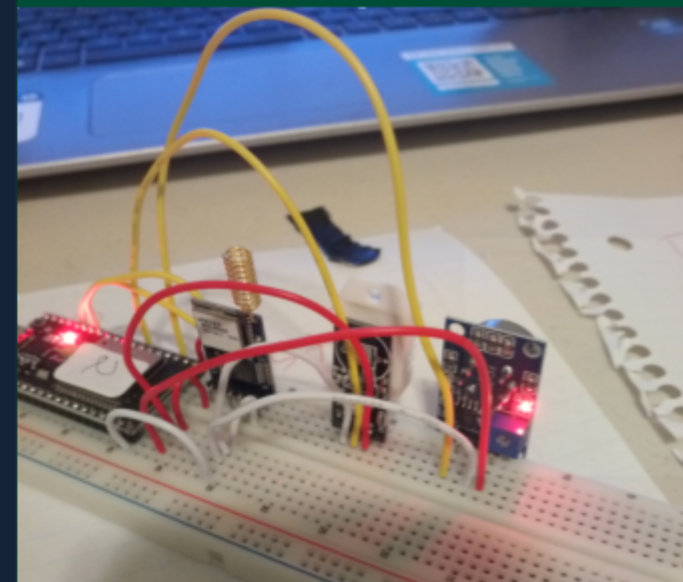


Figure 2: Post assembled on breadboard

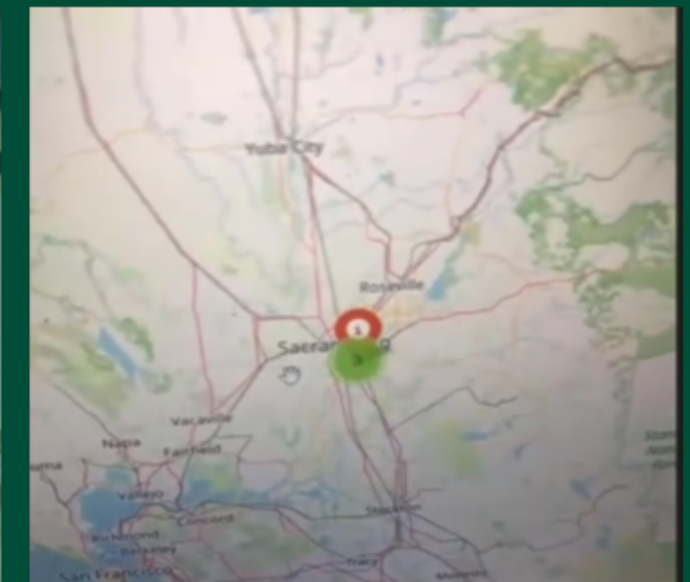


Figure 3: Temperature Sensor Triggered

Societal Benefit

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.