CALIFORNIA SCIENCE & ENGINEERING FAIR
2019 PROJECT SUMMARY

Name(s)

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Project Number

J1010

Project Title

FiresNearYou: Detecting Wildfires Using Smoke Sensors

Abstract

Objectives

The objective of this project is to create a widespread smoke detection system that can rapidly detect wildfires while consequently alerting firefighters and citizens about the imminent threat of forest fires.

Methods

We used an Arduino circuit and its compatible modules, as well as a computer with integrated Arduino "C" language. We used the computer to write our own program for the system. We also utilized the MIT App Inventor to develop an application that is compatible with our Arduino system.

Results

For a distance test, we had a safe median of 2 inches (the smoke sensor detection range was about 2 inches). However, when we pushed to 3 inches, only one trial out of three was successful. We then scaled this according to our project real-time ratio(24) for a total of 4 feet around the sensor. We next conducted a timed test; our criteria for this was 30 seconds. On the contrary, all of our timed results fell under 5 seconds (4.36, 3.8, 2.62).

Conclusions

All points considered, the wildfire smoke detector is an ideal method for rapidly detecting and alerting people about the status of wildfires. This implementation is not only extremely effective, but simple to scale and manage as well.

Summary Statement

This project is based on an innovative and widespread smoke detection system that can rapidly detect wildfires while consequently alerting firefighters and citizens about the imminent threat of forest fires.

Help Received

We were assisted in this project by our mothers and fathers, along with our local Folsom Fire Department and its Division Chief, Mr. Ken Cusano.