Name(s)	Project Number
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Project Title

Clean Your Air Now: An Indoor Air Pollution Control System

Abstract

Objectives/Goals

Devise software/hardware that can tackle the issue of indoor air pollution in the most optimized way: Assemble hardware with various readily available sensors and connect them to Arduino/Raspberry Pi, and write software that can measure, present, analyze and control the indoor air pollution levels.

Methods/Materials

The hardware consists of five Arduino MQ gas sensors, a dust sensor, Arduino UNO Rev3, breadboards, and several jumper wires. Each sensor detects air pollutants such as carbon monoxide and alcohol, however, the dust sensor senses dust density. I programmed software that can measure, present, analyze, and control the indoor air quality. I tested the accuracy of my software by exposing it to dust in the carpet before vacuum cleaning and during/after the use of the vacuum cleaner, nail polish, incense sticks, using a printer, etc.

Results

The software gave warnings and the indoor air quality was statistically worse after the use of items that were main causes of indoor air pollution, so the software proved to be accurate.

Conclusions/Discussion

One of the most surprising statistics reported by the EPA is that the level of indoor air pollution can be anywhere from 2 to 5 times more polluted than the worst outside air. But indoor air pollution is overlooked and outdoor air pollution is more in discussion. So, I built an indoor air pollution control system that is called CYAN (Clean Your Air Now). CYAN will alert people about indoor air quality in their homes, and so they will keep their homes properly ventilated and safe. CYAN is also cost-effective, and easy to assemble.

Summary Statement

I devised an indoor air pollution control system that can measure, present, analyze, and control indoor air quality levels.

Help Received

I designed and built the hardware myself. I wrote the Python programmed software with help from a family member.