The Community

Project Ideas:

Idea 1: Automated Breaking Emergency Device (ABED)

- Sensor(s):
    - Grayscale sensor
    - Ultrasonic distance sensor HC-SR04
- Actuator(s):
    - LEDs, relay switch or transistor
- Controller:
    - Raspberry Pi 4
    - Atmel ATMega328 8-bit microcontroller.

Idea 2: Air Purifier

- Sensor(s): air particulate size, humidity, temperature, altitude, etc. sensors
    - DEVMO Digital Particle Concentration Laser Sensor PMS5003 PM2.5 PM10+Cable for Arduino
- Actuator(s): LCD screen for measurement display, fans for purification, & relays
    - SunFounder Relay Module for Arduino and Raspberry Pi 5V DC Trigger by HIGHLO (HIGH Trigger)
    - OLED Module 12864 128x64 Yellow Blue SSD1306 Driver I2C Serial Self-Luminous Display Board for Arduino Raspberry PI
- Controller: microcontroller with UART input
    - ESP32 Feather Board

Project Summary:

   Our overall goal of this project is to create an inexpensive, lightweight and portable air quality control system for anyone that works, or lives in polluted areas, or just wants assurance in the air they are breathing. This system works by detecting the particulate matter in the air, and when a certain level of particulate matter is reached, the system will engage the filtering mechanisms, which begins to filter the air. The system will continue, until the particle counts are below the set limits. One side of this unit will display the Particulate Mass value(s) along with many other sensors, and the overall air quality, so the user will be well informed of the exact air quality at that time.

Idea 3: Self Spilling Coffee Cup

- Sensor(s):
    - MEMSIC MMC5883MA 3-axis Magnetic Sensor
- Actuator(s):
    - Center of gravity controller to distribute weight
- Controller:
    - ARM Cortex-M0

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