

Team_15,Project_44

Sound Pollution

Components:

1. Arduino RP2040 with Sound Sensor and Button.
2. Raspberry Pi Pico with LCD Screen, Buzzer, and Motor.

Analyzing Components used:

Input devices: Sound sensor, Button.

Output devices: LCD screen, Buzzer, Motor.

Communication Protocol: UART (Universal Asynchronous Receiver-Transmitter).

System Functionality:

1.Sound Sensor Task(Arduino RP2040):

- The sound sensor continuously monitors the ambient sound levels.
- If the sound level exceeds a certain threshold, it sends a signal to the Raspberry pi pico to activate the alert system.

2.Button Task (Arduino PR2040):

- The button acts as a manual override. when pressed, it sends a signal to the Raspberry pi pico to deactivate the alert system temporarily.
- This allows users to stop the alert system in case of false alarms or when the situation is no longer requires the alert.

3.Alert System Task(Raspberry pi pico):

- When activated by either the sound sensor or the button ,the alert system concurrently performs the following tasks:
 - ✓ **LCD Display:** displays a warning message indicating the sound pollution level and the activation status of the alert system.
 - ✓ **Buzzer:** emits a sound to alert people nearby about the high sound pollution level.
 - ✓ **Motor:** initiates vibration to create awareness about the sound pollution in a tangible way.

Explaining each term in the State Chart:

Inputs

- S : s is the sound level read from the sound Sensor.
- P : Button is pressed .

Outputs

1. M (Motor): if M=0 Then Motor is switched off.
If M=1 Then Motor is switched on.
2. B (Buzzer): if B=0 Then Buzzer is off.
If B=1 Then Buzzer is on.
3. L(LCD) :If L=0 Then nothing is displayed.
If L=1 Then A warning message stating the sound level pollution level is displayed.

Monitoring Sound Level

