Sound detection Ideas

Sensors that detect sound or "hear" are simply microphones. While we are familiar with the dynamic version as it represents the common "microphone" in the music industry, electrostatic and piezoelectric sensors are also used in measurement and as detectors

Sound sensors: Sound sensors work by converting sound energy into electrical energy. The sound sensor consists of a diaphragm, a magnet, a coil, and some wires. When sound hits the diaphragm, the diaphragm moves. The magnet and coil then convert that motion into electricity. When the sound sensor is attached to a microcontroller like Arduino. The electrical signal can be read. The microcontroller can then code to respond to the signal and do things like turn lights on and off in response to sounds Based on user program.

Sound Detection Sensor

The sound sensor module provides an easy way to detect sound and is generally used for detecting sound intensity. This module can be used for security, switch, and monitoring applications. Its accuracy can be easily adjusted for the convenience of usage.

It uses a microphone which supplies the input to an amplifier, peak detector and buffer. When the sensor detects a sound, it processes an output signal voltage which is sent to a microcontroller then performs necessary processing.

Sound detection sensor module for arduino detects whether sound has exceeded a threshold value. Sound is detected via microphone and fed into an LM393 op amp. The sound level set point is adjusted via an on board potentiometer. When the sound level exceeds the set point, an LED on the module is illuminated and the output is set low.

Specifications of sound detection sensor module:

- Working voltage: DC 3.3-5V
- Adjustable Sensitivity
- Dimensions: 32 x 17 mm
- Signal output indication
- Single channel signal output
- With the retaining bolt hole, convenient installation
- Outputs low level and the signal light when there is sound
- Output in the form of digital switching outputs (0 and 1 high and low)

Few sound sensors used for detection to prototype a micro controller:

1) Grove - Sound Sensor/ Noise Detector for Arduino (seeedstudio.com)

   Product description : The Grove - Loudness Sensor is designed to detect the loudness of environmental sound. Based on amplifier LM2904 and a built-in microphone, it amplifies and filters the high-frequency signal that received from the microphone, and outputs a positive envelope. This will make for Arduino's signal acquisition. The output value depends on the level of the sound input. In order to avoid unnecessary signal disturbances, the input signal will go through two times filtering inside the module. Lastly, there is a screw potentiometer that enables manual adjustments to the output gain.

2) Grove - Sound Sensor - Arduino Compatible - Seeed Studio

   Product description : An Arduino sound sensor based on the power amplifier LM358 and the electret microphone. It can be used to detect whether there's sound (like the sound of clapping, noise, etc) surround or not and output the sound strength of the environment. This sound module provides analog output signal.

   The above analog sensors are kind of transducers ,which measure the sound and intimate us in analog form so we can program the analog value to desired end to end application ,but not worth accurate results and fails in low sound detection

modules: connectivity to the gateway

- LoRa®-End Nodes-Sound Level Sensor-BROWAN COMMUNICATIONS INC.

The Sound Level Sensor utilizes Lora WAN connectivity to provide to easily measure and investigate sound levels in decibels (dBA) in a variety of building environments.

- LoRaWAN Sound Level Sensor | Noise Sensor | Milesight IoT (milesight-iot.com)

- LoRaWAN Sound Level Noise Sensor | IOTNVR

Modules the above mentioned sensors are used for sound detection using our lora gateway and intimate us at when sound detected to ttn network server

IN BUILD SOUND DETECTION modules (enabled with glass break frequency in db)

Monitor glass windows and doors for break-in attempts with Ring Alarm Glass Break Sensor. Using AI technology, the sensor detects the sound of glass breaking up to 25 feet. Get mobile alerts when the Glass Break Sensor detects the sound of glass shattering in your home, or set the sensor to automatically sound your Ring Alarm siren when armed in Office or Away mode.

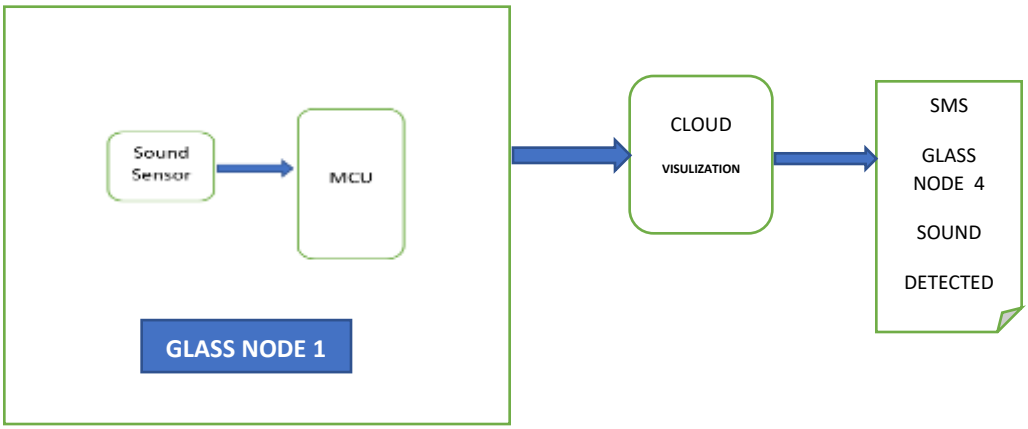
1) Glassbreak Detector | DSC Security Products | DSC
2) Glass Break Sensor | Ring
3) Glass Break Sensor | Broken Glass Window Alarm | ADT

High security and very low frequency sound detection catcher by Honeywell

3) Honeywell FG1625SN - Glass break sensor - wired | Walmart Canada(low latency and high security)

Project ideas:

1) Creating a sound detection node by our self and using it to the application
2) Creating a lora node in building and Measuring the frequency of sounds
3) Or using sound detectors and adding cloud applications



PROJECT 2: