IOT BASED SOUND PREVENTION SYSTEM USING NODE MCU

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Abstract: Sound pollution is a growing issue these days. It is necessary to monitor noise level and keep it under control for a better future and healthy living for all. Here we propose an noise level as well as noise pollution monitoring system that allows us to monitor and check live noise level in a particular areas through IOT. System uses sound sensors to sense presence of abnormal noise level constantly transmit this data to microcontroller. Also system keeps measuring sound level and reports it to the online server over IOT. The sensors interact with microcontroller which processes this data and transmits it over internet. This allows authorities to monitor sound pollution in different areas and take action against it. Also authorities can keep a watch on the noise pollution near schools, hospitals and no honking areas, and if system detects noise issues it alerts authorities so they can take measures to control the issue. Noise detection Sensor measures the sound level in the particular area and send the data to the NODEMCU board. The micro controller gets the inputs from the water sound detection sensor.The actions of these respective sensors outputs are processed by NODEMCU microcontroller and send output in decibels to the LCD module and send these datas to IOT cloud. Noise detection Sensor measures the sound level in the particular area and send the data to the NODEMCU board. The micro controller gets the inputs from the water sound detection sensor. The actions of these respective sensors outputs are processed by NODEMCU microcontroller and send output in decibels to the LCD module and send these datas to IOT cloud. The output of the controller are given to a Relay switch module. Then it turns off the outputs connected. When the sound level reaches the moderate and high limit the above seen process will be repeated and the Relay switch turn off the outputs. This process will be fully automatic.

Index Terms: Wireless Communication, Wireless Sensor Network, Sound sensor, Sensor Detection & Monitoring, I2C LCD 16X2, Relay Switch, GSM SIM800A,NodeMCU(ESP – 12E).

1. INTRODUCTION

Noise pollution is unwanted sound, it needs to be controlled to make the workplace comfortable. This chapter analyses noise mathematically and the effects of multiple sources are examined. Two noises of exactly the same level can have a combined noise level that is 3 dB higher than the individual values.

The greater the difference between the two individual noise sources, the lower is the combined noise level. Different people react differently to the same type of noise. A noise level up to 90 dB does not have any appreciable effect. Exposure in excess of 115 dB is not permitted with unprotected ears as it runs the risk of hearing impairment. The average noise level of various equipment used inside the washery generally ranges from 85 to 110 dB. Various control measures for the abatement of noise pollution have been studied. The hierarchy of control for a reduction of hearing loss to personnel is illustrated.

Sound pollution is a growing issue these days. It is necessary to monitor noise level and keep it under control for a better future and healthy living for all. Here we propose an noise level as well as noise pollution monitoring system that allows us to monitor and check live noise level in a particular areas through IOT. System uses sound sensors to sense presence of abnormal noise level constantly transmit this data to microcontroller. Also system keeps measuring sound level and reports it to the

online server over IOT. The sensors interact with microcontroller which processes this data and transmits it over internet. This allows authorities to monitor sound pollution in different areas and take action against it. Also authorities can keep a watch on the noise pollution near schools, hospitals and no honking areas, and if system detects noise issues it alerts authorities so they can take measures to control the issue.
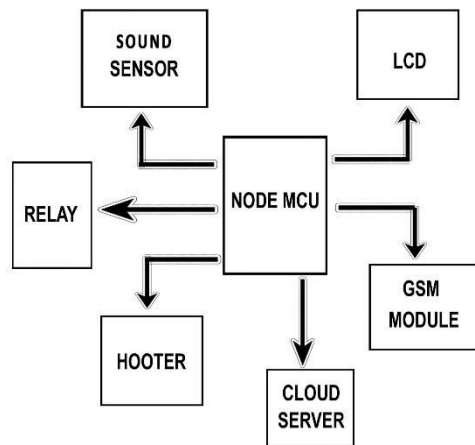
2. Proposed System

Fig.1. Block diagram of the Proposed System

NODEMCU

The Figure 1 shows the Block Diagram of iot based noise pollution prevention system using NODEMCU. Here the main device is NODEMCU microcontroller, its acts as a processing unit of the system.

NOISE DETECTION SENSOR

Noise detection Sensor measures the sound level in the particular area and send the data to the NODEMCU board. The micro controller gets the inputs from the water sound detection sensor. The actions of these respective sensors outputs are processed by NODEMCU microcontroller and send output in decibels to the LCD module and send these datas to IOT cloud.

LIQUID CRYSTAL DISPLAY MODULE

The 16*2 liquid crystal display is configured for inter integrated circuits(I2C).The LCD module is used to display the current readings of the sound level in decibels.

RELAY SWITCH

The output of the controller are given to a Relay switch module. Then it turns off the outputs connected. When the sound level reaches the moderate and high limit the above seen process will be repeated and the Relay switch turn off the outputs. This process will be fully Automatic.

3. CONCLUSION

The importance of noise level sensing is set to grow with increasing requirements for safety and environmental protection across many industries. The current range of noise sensing technologies has served us well but the future holds many new possibilities. Power and size reductions and an improvement in ruggedness will allow a new generation of body worn devices. And our project will prove to be boom for households and industries. A wide variety of noise detecting techniques is available. Some techniques have been improved since their first proposal and some new ones were designed as a result of advances in sensor manufacturing and computing power.

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