ULTRA SOUND REPELLENT USING ARDUINO UNO BOARD

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Abstract Mosquitoes and different insects ar harmful for humans as they'll cause several diseases that ar harmful for human health. so as to avoid the mosquitoes, folks use chemical repellents that have an effect on the surroundings adversely or dipteron repeller skin creams will produce skin issues. This paper proposes the sensible inaudible insect wicked system driven by harvest home energy from star panels. The inaudible waves have frequencies quite twenty,000 cycle per second that ar quiet to humans however once insects are available in the contact with inaudible waves, they sense the waves from special hair or sensilla gift on the antenna of mosquitoes which is able to produce stress on the systema nervosum and jam their own inaudible frequency and force them to depart that space. The frequency ranges of 38-44 kilocycle may be used effectively to repel the mosquitoes and flies. The system employs solar array as energy supply to charge the reversible 12V battery that is employed to drive the Arduino UNO to show on and switch off the dipteron repeller system. The projected extremist audio system may be accustomed repel mosquitoes.

Keywords - **Arduino UNO, Mosquito Repeller, Ultrasonic frequencies.**

I. INTRODUCTION

Mosquito-borne diseases such as dengue fever, malaria, and lymphatic have made humans suffer a lot in last few decades. It was reported that around 96 million people were infected by dengue globally in 2010. The proposed mosquito repeller system can be suitably employed to repel the mosquitoes or other insects. In the proposed system, the ultrasonic repelling device is used to reduce the usage of chemical repellents. The different frequencies may be used as repellents for different insect species, such as ultrasonic sounds for mosquitoes. The ultrasonic mosquito repeller system generally employs intermittent and high-volume ultrasonic frequencies to drive away the insects. The ultrasonic repeller system consumes low power with an adequate affordability, availability, and versatility. The proposed ultrasonic mosquito repeller system operates by harvesting the energy from battery and storing it in recha- rgeable lead acid battery and utilizing the harvested energy to turn on and operate the ultrasonic mosquito repeller system during evening and night

time. The section **II** describes the design of proposed system. The section **III** illustrates the specific objective. Hardware components section **IV** followed by methodology **V.**

II.PURPOSE

Human beings will pay attention sound inside the range of 20 Hz to 20 kHz. Sound of any frequency on pinnacle of 20 kHz is called as unhearable sound. many animals like cats, dogs, insects, mosquitoes have the characteristic of getting the cappotential to concentrate to this ultrasonic sound. In mosquitoes, this selection is attributed to the presence of sensory systems for their antenna. normally ultrasound is transmitted with the aid of using male mosquitoes and acquired with the aid of using female mosquitoes. however while breeding, woman mosquitoes normally keep away from the ultrasound and this reality can be wont to show out ultrasound in a totally variety like that created with the aid of using male mosquitoes and repel away the mosquitoes. The ultrasound flip outs a strain at the antennae of the mosquitoes and repels them away. In opportunity words, an smooth circuit is supposed which might also additionally produce ultrasound inside the frequency range of 20 kHz to 38 kHz, that may pall mosquitoes

III. SPECIFIC OBJECTIVE

In order to accomplish the overall objective of this project, the following are the specific objective:

- Develop a circuit to prevent the mosquito by using microelectronic knowledge.
- To access evidence of impact on malaria infection.
- To prevent allergic reactions from mosquito bites.
- To prevention of mosquitoes without any side effects.

IV. HARDWARE COMPONENTS

The circuit diagram of proposed system is shown in below. The various modules employed in the proposed system are lead acid battery, Arduino Uno board, lcd display, piezzo electric buzzer, switches and ultrasonic repeller and the detail of the proposed system have been discussed below in detail.

A. ARDUINO UNO BOARD

This is a small controller board created with ATmega32. it's fourteen digital inputs and outputs pins with vi analog inputs. It works on sixteen megacycle per second oscillator, an influence Jack and a button. It contains everything required to support the small controller. it's 4/8/16/32K bytes of In- System Programmable Flash with Read-While-Write capabilities. The board is given

with 5volts offer returning from transformer. The program is uploaded with USB jack with acceptable code needed for style of project.

Figure 1: ARDUINO UNO BOARD

B. LCD DISPLAY

LCD is especially used for data show purpose once card is browse by reader. Here we have a tendency to area unit exploitation 2x16 alphanumeric display. the flexibility to show numbers, characters, and graphics. this can be in distinction to LED's, that area unit restricted to numbers and characters. Since the LCD's consume less power, they're compatible with low power electronic circuits, and may be power-driven for long duration's. {lcd|liquid crystal show|LCD|digital display|alphanumeric display} pins area unit connected with the Arduino pins for display of data in line with the secret writing uploaded in small controller.
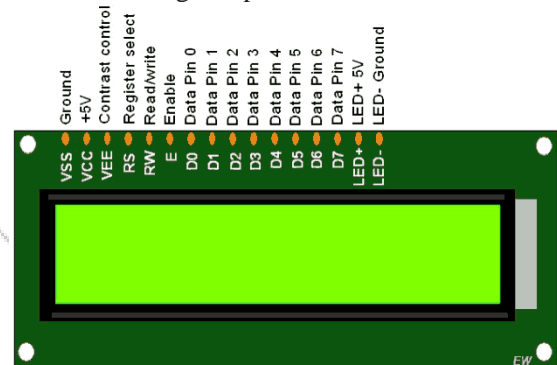

Figure 2:LCD Display

C. BUZZER

A buzzer is Associate in Nursing audio device, which may be used be mechanical, mechanical device, or electricity. Typical uses of buzzers and beepers embody alarm devices, timers, and confirmation of user input like a click or keystroke.

Figure 3: Buzzer

D. SWITCH

A single pole signal throe switch serves in circuit as on –off switches. It has only one input terminal and one output terminal.

Figure 4: Switch

E. BATTERY

It has a positive and negative terminals individual. It has a rectangular prism shape with rounded edges and a polarized snap connector at the top.

Figure 5: Battery

F. Ultrasonic Repeller

Ultrasonic repeller generates the ultrasonic waves which are easily detected by insects and mosquitoes. The ultrasonic waves intercepted by mosquitoes through their antenna creates stress on their nervous system, jam their own ultrasonic frequency and force them to leave that area.

V. METHODOLOGY

DESIGN

The immoderate sound repeller system designed during this project consists of hardware and software system half. The hardware consists of construction of the project circuit, which can be explained very well. The software system half deals with the programming a part of the project. he project consists or 5 circuits that's the ability provide, the microcontroller, buzzer, liquid crystal {display|LCD|digital display|alphanumeric display} display system.

DRIVER CIRCUIT

The driver circuit consists of the following
• LCD Display
• Buzzer
Whenever an mosquito comes near to system then the buzzer system will alert the driver with the heavy sound. The LCD display is used display the frequency of mosquito range.

VI. WORKING PRINCIPLE

The operation of proposed system can be broadly classified into two categories i.e. to harvest the power and store the in battery during day time and to drive the mosquito repeller from harvested power at night time (05:30pm-11:30pm and 04:30am-06:30am). The mentioned time periods correspond to the peak time when the mosquitoes are generally found in surroundings. The solar panel provides the maximum output voltage and current rating of +12v, respectively. The battery used in this system charges 12V current rating. The harvested power is efficiently processed and stored in +12V battery and charging circuit consisting of switches to increase the frequency range. The output voltage from the battery is supplied to which produces the regulated +12V supply to power and operate the Arduino UNO. The Arduino is the heart of smart mosquito repeller system.
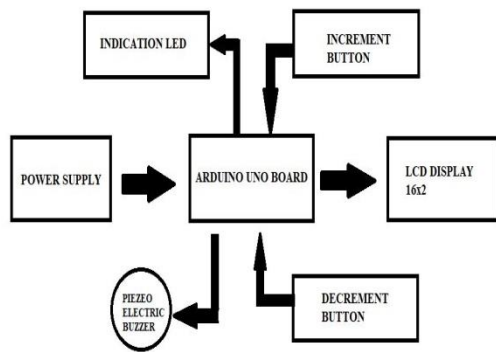
VII. RESULT

A ultra sound repellent system is designed and mounted on a very simple and easily understandable model constructed to demonstrate the system and it was found functional. The display was able to produce frequency that are at shorter range accurately. This is due to mosquito bites from the environments.

VIII. CONCLUSION

In the proposed design, battery driven smart ultrasonic mosquito repeller system has been proposed which can be efficiently used to replace the use of chemical repellents which affect the environment.

The designed system consumes very low power of 0.74 watts and can be effectively used in lawns and environment parks to repel the mosquitoes. In future, this mosquito repeller can be replaced by highly efficient high power repeller so that it can cover more area and can be used to repel insects from farms.

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