

Bio-Conservation using Wavelet Analysis by Monitoring Databases

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Abstract—Now –a-days the vehicle accident rate has been increasing as compared to previous decade. The accident rate has increased by 54%. Animal detection plays an important role in day to day life. Wavelet analysis is a technique to identify spatial structure in transit data to display hierarchical information. The multiple factors which causes the animal to be attracted towards roadside from the forest can be analysed through wavelet transform. Increasing number of accidents on forest roadways leads to both human and animal mortality. The major component is the PIC microcontroller ESP8266EX which performs all the operations related to controlling the embedded system circuit. In this project the aim is to detect the animals who crossing their boundary and gives the message to forest officer through GSM technology. This project attempts to overcome all those scenarios and aims for bio conservation.

Keywords—Microcontroller; GSM Technology; Ultrasonic Sensor; Fourier Transform.

Abbreviations—Global System for Mobile Communication (GSM); Light-Emitting Diode (LED); Subscriber Identity Module (SIM).

I. INTRODUCTION

THE first part will detail described about embedded safety kit. In previous decade, In India 24 % area covered in forest. Forestry industry is source of significant income to over for 400 million people in India, mostly rural. Population in India is increasing at high rate to provide shelter to all of them is great challenge. So most of people live around forest to fulfill their needs. Since people live closer to forest they often encounter wild animals and for safety of human being often wild animals are killed or human beings are attacked by animals [Kim et al., 6; Viani et al., 11; 12; 13].

Now safety of both human and animal is equally important. We need to implement some kind of warning system to make sure human and wild animals live safely. This has two parts: one where humans should get notification whenever wild animal comes near residential area and other part is to keep wild animal away from human without

harming them. Our project intends to solve these issues. There are number of villages which are situated near the forest area, so there is risk in front of people from wild animal. Now a days the vehicle accident rate has been increasing as compared to previous decade [Nirit Datta et al., 1]. The accident rate has increased by 54%. This system minimizes the action time after an accident. This paper deals with such system to detect possible collision and prevent it. The second part will be analysis of database using Fourier transform. In additionally, we added one database about why wild animal should transform from one place to another. The above problem mostly cause due to lack of rainfall, water scarcity, fire and deforestation [Tamil et al., 8].

II. HARDWARE DESCRIPTION

2.1. Arduino UNO ATMEGA238

The Arduino Uno is a microcontroller board based on the ATmega328. It has 14 digital input/output pins (of which 6

III. SOFTWARE DESCRIPTION

The compatibility of the system performance is executed using the software. Programming the microcontroller is performed in Embedded C language. The program is compiled and run through MP LAB IDE compiler. The HEX file is generated with respect to the compiled code using ISP Programmer and this file is dumped on to the microcontroller. This is the software that will take the HEX file generated by whatever compiler taken, and send it with respect to the very specific ISP transfer protocol to the microcontroller. This programmer is flexible, economical and easy to build. The programmer hardware uses the standard TTL series parts with no special components.

The features of the software are:

- Read and write the Intel Hex file
- Read signature, lock and fuse bits
- Clear and Fill memory buffer
- Verify with memory buffer
- Reload current Hex file
- Display buffer checksum
- Program selected lock bits & fuses
- Auto detection of hardware

IV. WAVELET ANALYSIS

Wavelet analysis is a technique to identify spatial structure in transit data to display hierarchical information. Wavelet analysis represents the next logical step: a windowing technique with variable-sized regions. Wavelet analysis allows the use of long time intervals where we want more precise low-frequency information, and shorter regions where we want high-frequency information. The multiple factors which causes the animal to be attracted towards roadside from the forest can be analysed through wavelet transform [Sahar Lazim Kadoory, 9]. It will be analysis of database using Fourier transform. In additionally, we added one database about why wild animal should transform from one place to another. The above problem mostly cause due to lack of rainfall, water scarcity, fire and deforestation.

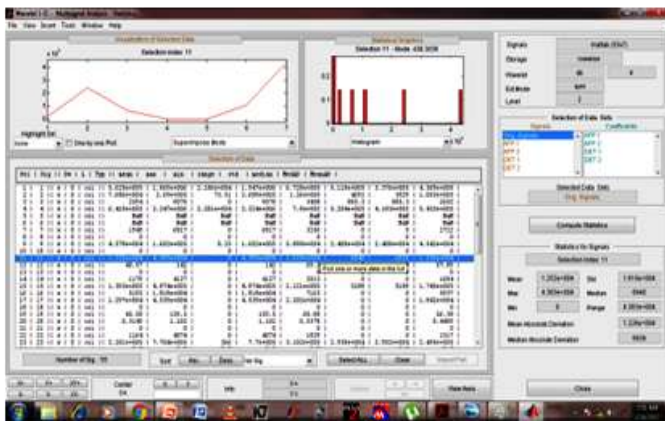


Figure 4: Wavelet Analysis

V. PROPOSED METHODOLOGY

Knowing the fact that the saving the life of a human being or animal is the prime concern for every researcher. Many research organization and individual researcher are working in that area. Many systems have been prepared by the researcher, from which some of them has implemented and some not. The main reasons for rejection of that type of system are their reliable characteristics, cost, complexity and many other reasons. Many researchers have done work on alerting in terms of emergency calling via GSM modem to forest officer. Mostly the work is based on accident in the forest and collision with humans in forest villages. And the rest have worked on alerting and detection using ultrasonic sensor. By using Fourier transform to analyse statistical information, this system was fully activated by using database from Indian Meteorological report to overcome all problems.

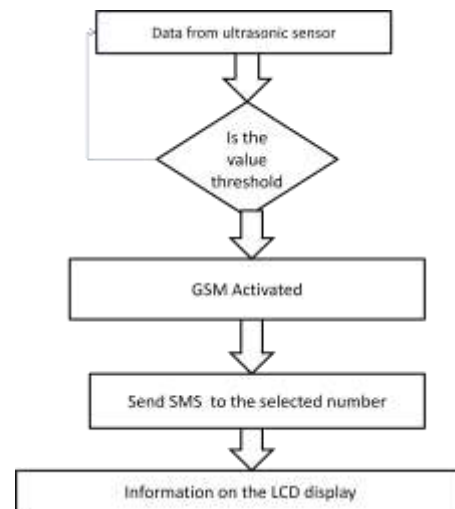


Figure 5: Proposed Methodology

VI. EXPERIMENTAL SETUP

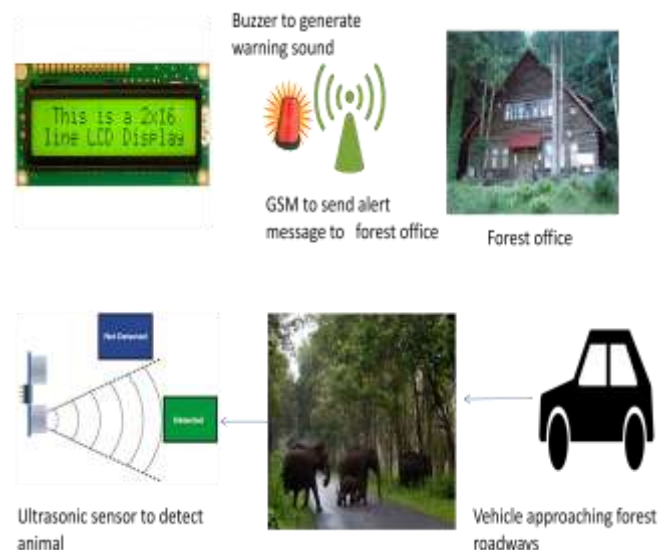


Figure 6: Experimental Setup

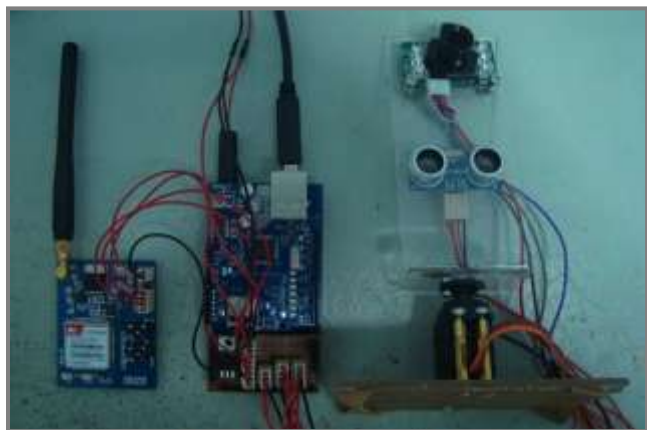


Figure 7: Output

VII. CONCLUSION

Every other day, some or the other species are getting extinct. Some species have become rare. Thousand are endangered. And some are on the verge of extinction. Time have come when strict counter measures needs to be taken up by the Government and made sure that it gets implemented regularly. The automatic sensing and alarm system can eliminate human death and injuries due to road accidents and can also help the forest departments or any other responsible authorities monitor their movement so that they do not stray out of their habitation zone. The time is fast approaching when this species will also become endangered. This sensing and alarm system will not be a huge monetary issue for Governments in terms of implementation and could see a decrement in human deaths due to road accident.

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