Animal Sound Identification System Usng Iot Devices

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ABSTRACT: The problem of crop destruction by wild animals has become a serious problem for the farmer. Effective solution and urgent attention is needed to solve this serious problem. As the animal enters and destroys the crop it will cause a huge financial loss to the farmer. To solve the problem of farmer we have designed a smart earlier detection and protection system with the help of IOT. The main aim is to prevent the loss of crops and to protect agricultural land from wild animals which causes major damage to the agricultural area. The proposed system gives the technical solution for this problem using wireless sensor networks. Here wireless sensor detects the animal, tracks the location and sends the message to the farmer's mobile number which is stored priorly. Different sensors and devices are used to transmit data.

KEYWORDS: Animalvoice recognition, Location,SMS.

I. INTRODUCTION

Animals represent a major group of multicellular and eukaryotic organisms of the area Animalia or Metazoa. Scientists had estimated that there may be 30 million species of animals on the earth and can be group into 6 basic groups, which are invertebrates, fishes, amphibians, reptiles, mammals, and birds. Among these groups, mammals are the vertebrates that evolved from the reptiles and there are about 5400 species of mammals alive today. The mammals display remarkable arrays of adoptions and these adoptions enable them to inhabit in a wide range of habitats. Some of the examples of the mammal animals are lion, tiger, cat, bear, dog and so on. Recognition system is a very useful system that helps the users to recognize human, object, and animal. Animals have different frequency range that differs from animal to animal. Sensors identify the animal voice based on their frequencies. In this system there are PIR sensors ,when a warm body like a human or animal passes by, it first intercepts one half of the PIR sensor, which causes a positive differential change between the two halves. Aurdino mega board comes with USB cable port that is used to connect and transfer code from computer to the board. Arduino software called Arduino IDE is used to program the board which is a common software used for all boards belonged to Arduino family. A6 gsm module is connected to aurdino. A valid SIM is used at the back side of the module to send SMS to the farmer. A neo 06 gps module is used to track the location of the intruder and alert farmer through SMS. Further this paper includes literature survey, methodologies and technologies used in our system alongFuture enhancements that can be done and conclusion.

II. LITERATURE SURVEY

In this paper an approach has been discussed to automatically detect the presence of animal by the detection of a low frequency sound produced by animals. In many developing countries, agriculture is one of the primary livelihoods of common people.

2.1 AID: A Prototype for Agricultural Intrusion Detection Using Wireless

In many developing countries, agriculture is one of the primary livelihoods of common people. Agriculture requires various types of technologies for improving crop yields. The attack of animals in the agricultural and the theft of crops by humans cause heavy loss in cultivation. In this work, they propose a hardware prototype using Wireless Sensor Network (WSN) for intruder detection in an agricultural field. The proposed system is named Agricultural Intrusion Detection (AID). AID helps to generate alarms in the farmer's house and at the same time transmits a text message to the farmer's cell phone when an intruder enters into the field. In order to implement the proposed scheme, authors design and deploy Advanced Virtual RISC (AVR) micro-controller-based wireless sensor boards over an outdoor environment and evaluate the performance. WSN technology is widely used for different purposes of agriculture. In an agricultural field, the deployed

sensors sense different physical phenomena around them such as temperature, humidity, and water level of the field. Thereafter, the sensed data are transmitted to the sink or any centralized device through single- or multi-hop connectivity. After collecting the data, different decisions are taken by the farmer. Due to theft in agricultural fields, often there is substantial loss is incurred, which prevents efficient productions of crops. In this work, authors present a prototype for intrusion detection using WSN in an agricultural field. The designed prototype enables a farmer to receive text messages on his/her cell phone.

2.2 Integration of Cloud Computing with Internet of Things: Challenges and Open Issues
        Thispaper provides an overview of the integrationCloudComputingintotheIoT;when we try to integrate IoT and Cloud Computing benefits will be more when they were used alone.here we show the methodology which can store more number of datasets and later it will be connected to IOT model in order to get desired results.A model which is made up of PIR Sensor,Voice Recognition Model,Mega will be assembled together .ThingsSpeak is the cloud technology which will be used to store datasets upto 1000 sounds of the animals with their variations.

2.3   IOT Solutions for Crop Protection against Wild Animal Attacks
        This paper provides an integrative approach in the field of Internet of Things for smart Agriculture based on low power devices and open source systems.it provides a repelling and monitoring system for crop protection against animal attacks and weather conditions.

III. METHODOLOGY
The following methodology we are using in our project and it consists of the following modules:
Module 1: Detect the sound of the animal: When the animals found near the farm land our sound recognition module will detect the sound of the animal.
Module 2: Match that sound with the sounds in the dataset: Our data base consists of many different type of voice of different animal and it will compare it with the recognize voice and identifies the animal.
Module 3: If it matches it sends the location and name of the animal to the people: After identifying the animals sound it will track the location of the animal with the help of GPS and alerts the farmer through 'Alarm' sound and 'SMS'.

Module 4:   If it doesn't match with given dataset then it ignores the sound: If recognizeed sound doesn't match with the dataset, it simply ignores that sound.
Module 5: Display the final output: Displaying the final output regarding the sound and sends the location of the animal.
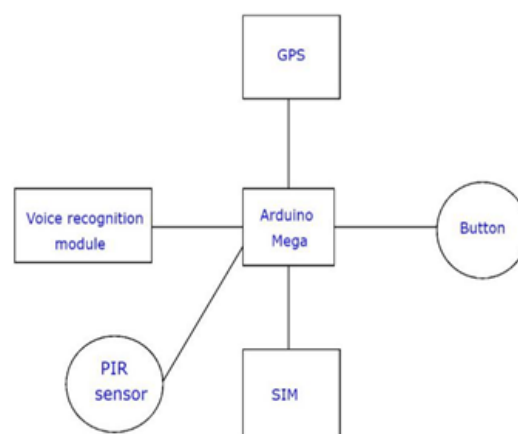

Fig 1:Block Diagram

PIR sensor: A passive infrared sensor (PIR sensor) is an electronic sensor that measures infrared (IR) light radiating from objects in its field of view. They are most often used in PIR-based motion detectors. PIR sensors allows to sense motion, almost always used to detect whether a human has moved in or out of the sensors range.
GPS Modem: We have used GPS modem to retrieve and longitude and latitude of the location. This GPS modem communicates using serial communication with the microcontroller. GPS modem sends a bunch of data to the microcontroller. This bunch of Data contains many parameters which include longitude and latitude.
Arduino Mega: The Arduino Mega is a microcontroller board based on the ATmega2560. It has 54 digital input/output pins (of which 14 can be used as PWM outputs), 16 analog inputs, 4 UARTs (hardware serial ports), a 16 MHz crystal oscillator, a USB connection, a power jack, an ICSP header, and a reset button.
Neo A6 GSM: A6 GSM cellular chip measures less than the size of a postage stamp but packs a surprising amount of features into its little frame.
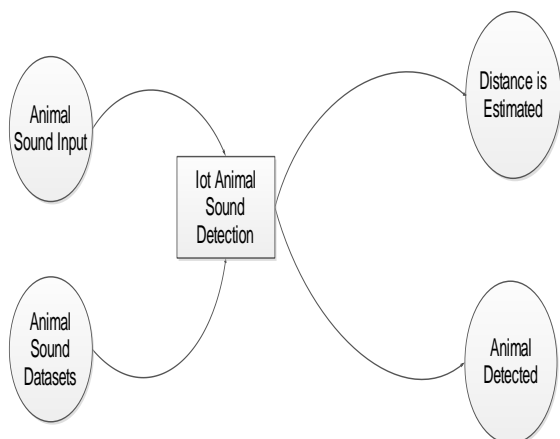
Fig 2: Flow Chart

As you can see first when some animal makes some voice or noise the voice recognition module identifies it through the dataset what we have provided it senses through the PIR sensor after sensing it sends the message to the registered number about the location and the identified animal sound.
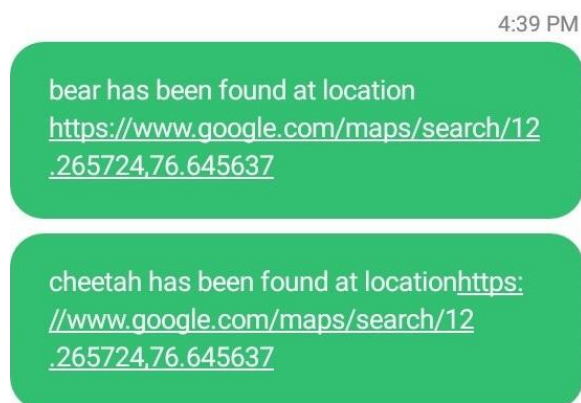
IV. Result

Fig 3:Message will be sent to registered number

As we are using PIR sensor as for the animal enters the farmland it tries to sense the animal by its sound and then after identifying as seen in the above snapshot message will be sent with the name and the location of the animal where it has been found.
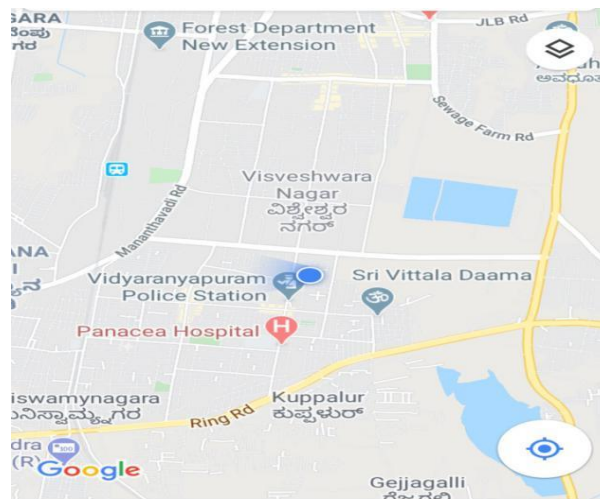

Fig 4:Location

After getting SMS regarding the location and the name of the anima its location will appear on the screen as above

V. FUTURE ENHANCEMENT

This study firstly reveals that IOT technology is a very promising technology for the future in detecting efficiently the voice of animals in farmlands. Secondly, and through the real experiments performed in the field, we conclude the effectiveness of the project .

Hence, introducing the modalwhich can detectthe presence of animal , identify the animal by its voice,then after identifying relevant data about the same will be sent to phone number of the farmer via SMS , information like name and the location will be sent to the registered number. It can identify bointruder and the animal for the future we must develop a project where it can identify thousand different voice along with its variations which can be done through the help of Cloud.

VI. CONCLUSION

Thus the animal tracking system is used to track the animals in zoo and national parks. It continuously monitors the animals and human presence. If any accident happens to them in the zoo, physical injury or any disease, we cannot find out exact location of animal in such a large area. To avoid such problems, our system can be used. This does not require human attention as this is completely self-independent and automated system.

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