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GPS ARDUINO BASED TRACKING AND ALARM SYSTEM FOR PROTECTION OF WILDLIFE ANIMAL

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Abstract - *Animal detection is important to day life. This project used to detect the animal entering in to human living areas. Main components are GPS used to track the location of the animals, Temperature Sensor is used to know the health of the animals. RFID tag is used to detect the animals condition or detail. Temperature and location will be displayed on IOT and also this data send to particular mobile using Bluetooth. The alarm is given if the animals cross the boundary. It is easily identify the animal location by using GPS. It helps to know the temperature of animal by using temperature sensor. It is easy to update all the data about the animal in the IOT. It mainly useful to Arduino(controller) for interface all the object. It is easy to know the animal details by RFID tag and read the details in RFID reader. The GPS device is connected to the Arduino (Controller) which is used to monitor the location of animals. And it will send the location of the animal which affected due to increase temperature. After getting all the information about the location of animal and the temperature and any object movement like human it will be displayed on the PC using the IOT kit. It frequently monitors the temperature of each animal. If there is any variation in the temperature level, it will be updated on the IOT module. Another one, RFID tag will be fixed with the animals. Once the animal cross its boundary the reader will read the tag and sends alert.*

Key Words: GPS, RFID Tag, RFID reader, Temperature sensor, IOT kit, Arduino, Ultrasonnic sensor, Buzzer

1. INTRODUCTION

When the tag receives the transmission from the reader/antenna, the energy runs through the internal antenna to the tag's chip. The energy activates the chips. The need for this project is to prevent the animal from the human and also vice versa. By the way of alarm buzzer, because some area to be restricted so once the animal cross the boundary that time automatically that alarm buzzer produced some sound.it is used to know the human for animal cross the boundary so, that time all ares alarmed. The important components are GPS to find the location of animal and temperature to find the animal health condition and then RFID tag to know the animal details, and then RFID reader to read the RFID tag. This the main needs for this project. All components to be actioned by the way of uploading a particular code is there. There are GPS, Arduino, Buzzer, Ultrasonic Sensor, and then Temperature Sensor about all this data to be changed the every second. That time the data directly send to be IOT module by the Arduino. In the IOT module is very useful for monitor the animal details easily without the help of humans for taking the data for each, and every second. Continuously updated the data about Location, and the Temperature Sensor. In the programming language is embedded c, It is straightforward to understand and the simple coding. In this main concept of the IOT is easily monitor the animal activities changes in physically and internally.

It helps to know the temperature of animal by using temperature sensor. It is easy to update all the data about the animal in the IOT. It mainly useful to Arduino(controller) for interface all the object. It is easy to know the animal details by RFID tag and read the details in RFID reader. The GPS device is connected to the Arduino(Controller)which is used to monitor the location of animals. And it will send the location of the animal which affected due to increase temperature. After getting all the information about the location of animal and the temperature and any object movement like human it will be displayed on the PC using the IOT kit. It frequently monitors the temperature of each animal. If there is any variation in the temperature level, it will be updated on the IOT module. Another one, RFID tag will be fixed with the animals. Once the animal cross its boundary the reader will read the tag and sends alert.

2. RELATED WORKS

"A Self-Induced Warning System for Wild Animal Trespassing Using Machine Vision System". Mauro dos Santos de Arruda, Gabriel Spadon, Jose F Rodrigues, Wesley Nunes Goncalves. In India an increase in human population caused by industrial and agricultural growth has led to the conversion of the forest lands into human settlements. Animals that wait near forest-village borer for nightfall particularly to eat crops have been known to kill or harm people. Therefore there is a necessity to safeguard human livelihood without endangering the animal population by developing a suitable monitoring system. The development of a monitoring system for elephant intrusion can help to track the presence of animals over forest prone areas and avoid the chance of interference or harm of animal to human life. Animal is identified by matching the present captured image through vision based camera with the template image available. The pattern matching is done for identifying specific parts of the elephants such as ivory, trunk, ear etc. The platform used for processing is Machine Vision using Lab view based image processing algorithm. Cameras are fixed at places where animals usually used to enter the villages, and images are sent for processing through a

wireless system. If the pattern matches with the template warning signals are produced. This system reduces the time required to detect animal presence. Thus this system becomes effective and preferable to implement. An early warning is sent to the forest officials as well as the villagers about the arrival of elephants towards forest-village prone areas. Thus, this system provides a solution for an unsupervised process for individual species identification specifically for elephants.

"Large-Scale Ecological Analyses of Animals in the Wild Using Computer Vision"Mikayla Timm, Subhransu Maji, Todd Fuller Camera traps are increasingly being deployed by ecologists and citizen-scientists as a cost-effective way of obtaining large amounts of animal images in the wild. In order to analyze this data, the images are labeled manually by ecologists, where they identify species of animals and more fine-grained details, such as animal sex or age, or even individual animal identities. However, with the number of camera trap images quickly outgrowing the capacity of the labelers, ecologists are unable to keep up with the wealth of data they are obtaining. Using computer vision, we can automatically generate labels for new camera trap images at the rate that they are being obtained, allowing ecologists to uncover ecological and biological information at a scale previously not possible. In this paper, we explore computer vision approaches for species identification in camera trap images and for individual jaguar identification, both of which show promising results. We make this novel dataset publicly available for future research directions and further exploration.

"An Animal Detection Pipeline for Identification "Jason Parham, Charles Stewart, Jonathan Crall, Daniel, Rubenstein, Jason Holmberg. This paper proposes a 5-component detection pipeline for use in a computer vision-based animal recognition system. The end result of our proposed pipeline is a collection of novel annotations of interest (AoI) with species and view-point labels. These AoIs, for example, could be fed as the focused input data into an appearance-based animal identification system. The goal of our method is to increase the reliability and automation of animal censusing studies and to provide better ecological information to conservationists. Our method is able to achieve a localization map of 81.67%, a species and viewpoint annotation classification accuracy of 94.28% and 87.11%, respectively, and an AoI accuracy of 72.75% across 6 animal species of interest. We also introduce the Wildlife Image and Localization Dataset (WILD), which contains 5,784 images and 12,007 labeled annotations across 28 classification species and a variety of challenging, real-world detection scenarios.

3. PROPOSED SYSTEM

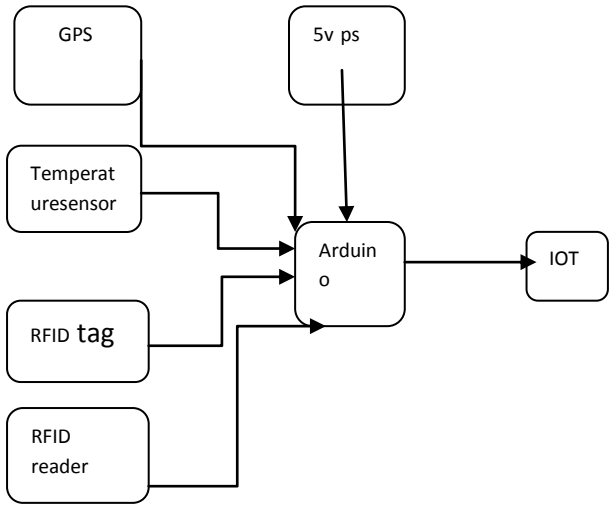
Here we don't have GPS for tracking the location of animals. There does not present any alert system if the animals cross the boundary. The protection of wild animals is not sure with the existing system. Here we need manual help to monitor the animals Here this type of issues are overcome the proposed work and then it is very useful to the further work. In this project, it mainly consists of sensing part and monitoring part. In the sensing part, we are using two sensors, namely temperature sensor and RFID tag. The temperature sensor is fixed at the surface of the animal. It frequently monitors the temperature of each animal. If there is any variation in the temperature level, it will be displayed on the LCD display. Another one, RFID tag will be fixed with the animals. Once the animal crosses its boundary the reader will read the tag and sends alert. It gives the alert to the people through the prerecorded voice. The GPS device is connected to the Arduino(Controller)which is used to monitor the location of animals. And it will send the location of the animal which affected due to increased temperature. After getting all the information about the location of animal and the temperature and any object movement like human it will be displayed on the PC using the IoT kit. It is easily identendify the animal location by using GPS. It helps to know the temperature of animal by using temperature sensor. It easy to update all the data about the animal in the IOT. It mainly usefull to Arduino(controller) for interface all the object.It easy to know the animal details by RFID tag and read the details in RFID reader. It is easily identendify the animal location by using GPS. It helps to know the temperture of animal by using temperture sensor. It easy to update all the data about the animal in the IOT. It mainly usefull to Arudino(controller) for interface all the object.It easy to know the animal details by RFID tag and read the details in RFID reader.

4. PROPOSED ARCHITECTURE

We are proposed the architecture for clear view of the concept of the project and then this project consist of transmitter and receiver side. We are using the iot for update the all details. Once the animal crosses its boundary the reader will read the tag and sends alert. It gives the alert to the people through the prerecorded voice. The GPS device is connected to the Ardinuo (Controller) which is used to monitor the location of animals. And it will send the location of the animal which affected due to increased temperature. After getting all the information about the location of animal and the temperature and any object movement like human it will be displayed on the PC using the IoT kit.

4.1 TRANSMITTER

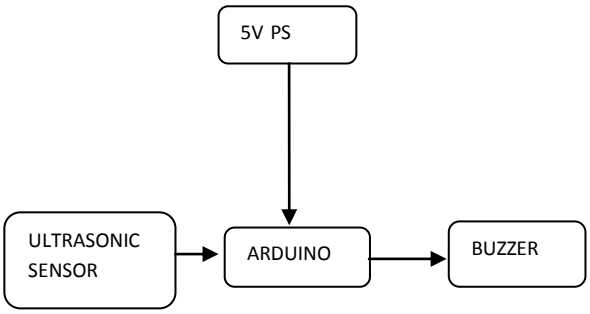
In this transmitter consist of GPS, temperature sensor, RFID tag, RFID reader all the information to be updated in the IOT by the way of Arduino with the 5v power supply. Transmitters are necessary component parts of all electronic devices that communicate by radio.



Transmitter figure

4.2 RECEIVER DIAGRAM

In the receiver side consist of ultrasonic sensor is used to detect when the animal cross the boundary that time updated information to be send the other side and then the buzzer to be produced he alarm sound by the way of arduino like controller with the 5v power supply.



Receiver figure

In this receiver diagram to produced the alarm by the information send from ultrasonic sensor to arduino to buzzer.

5. METHODOLOGY

5.1 EMBEDDED C

It is one of the programming languages. It is easy to understand for the user. Write the code in embedded c and then upload in arduino. Then also write a code for GPS, Temperature sensor, Rfid tag and also a buzzer. It is used for micro controller like arduino. In this is extension of c programming. And then it is used for the hardware architecture. In the language may change the header file from controller to controller only. In this program is used for developing any embedded system application. All the components are working is based on microcontroller that the programmed by embedded c. In the embedded clause is insert inside the main clause. In the arduino is one of the embedded system devices. In the arduino can be used for making a simple automated electronic projects.

IOT

All components to be actioned by the way of uploaded a perticular code is there. Gps, Arduino, Buzer, Ultrasonic Sensor and then Temperature Sensor about all these data to be changed the every second. That time the data directly send to be IOT module by the aurdino. In the IOT module is very usefull for monitor the animal details easily without the help of humans for taking the data for each and every second. Continously updated the data about Location and the Temperature Sensor. In the programming language is embeded c, It is very easy to understand and the simple coding. In this main concept of the IOT is easily monitor the animal activities changes in physically and internally.

6. MODULE DESCRIPTION

6.1. LOGIN MODULE

We use this WWW.iotclouddata.com/20log/157 webiste to set the username and password in the any android mobile and turn on the mobile data and connect the hotspot. And then automatically that login pages opened and then open the next page. You set the username and password for your convenient mobile phone. And then the hotspot also turn on the same respective mobile phone. In this module is used to shoe the details for authorized person by the creating a login and password.

6.2. DATA LOG MODULE

In the data module contain the location and then animal temperature and the species of animal and then all data to be displayed each and every second in the mobile through the IOT usage. That time keep the hotspot through the mobile data. In the GPS only show the location of the animal by the way of proper signal gained. And then temperature sensor gives the temperature details of the animal to be the every second. And then the RFID Tag contain details of animal like animal name, species, age, injured details that data read by the RFID reader and then the reader to be send the details in IOT by the way of arduino (controller) easily connect the all details to update the IOT and monitor in our mobile

7. RESULT

This temperature page used to monitor the temperature, location, all details about animal for each and every second. Then every time changes all the data about the animal like the temperature, location, health condition. By the usage of components like Gps, arduino, Temperature Sensor, RFID tag RFID reader these the components collect the data about the animal and then updated to the IOT by the arduino(controller). In this arduino used to connect the all component easily. Then the animal cross the respective boundary that time the alarm produced the sound. Then purpose of this setup is used to prevent the animal from animal and then human from animal so, this is very useful to prevent the wildlife sanctuaries.

8. CONCLUSIONS

This project proposed for monitor the animal in the wildlife area. By the usage components like Gps, arduino, Temperature Sensor, RFID tag RFID reader these the components collect the data about the animal and then updated to the IOT by the arduino(controller). In this arduino used to connect the all component easily. Then the animal cross the respective boundary that time the alarm produced the sound. Then purpose of this setup is used to prevent the animal from animal and then human from animal so, this is very useful to prevent the wildlife sanctuaries. A wildlife officer have receiver in his/her hand and will search location. However main drawback of this technique is that range of wireless transmitter is less. In some sensors it is 100 meters in some sensor it is in few kilometers but not more than that. But as we know that forests and wildlife national parks are hundreds of kilometers in length. And in such situations these wireless transmitters are not much useful and they are time consuming. With the help of GPS technology and temperature sensor technology, we can track an animal in the forest of thousands of kilometers in length

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