

## WARNING SYSTEM FROM THREAT OF WILD ANIMALS USING IOT

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### Abstract:

Wildlife entering in to populated areas has recently become very Popular. The space for wild animals is decreasing as humans are encroaching forests. It creates great loss to property and life when wild animals enter in to cities. We use latest advances in technology such as Internet of Things (IoT) to create an alert system of possible wildlife leaving the forest and also the message will send to the users Mobile to alert them. We use low cost motion detectors and Passive Infrared sensors to achieve this. We relay information of such motion to a control centre to take further actions. We also include making loud noise through speakers in which the animals cannot enter in to land. The basic idea of IoT is to connect different sensors and establish communication and also provide services. In this article, we make use of several IoT devices at the periphery of natural reserve to create an alert system. This system can also be used to find out smugglers and other people illegally entering in to the forest.

**Keywords:** IoT, Passive Infrared Sensors

### 1.OBJECTIVES:

The main objective of our proposed system is to prevent the wild animals from the accidents and to notify the peoples located near forest areas. This system will put the Passive Infrared Sensors in the borders of the location area of the people, alert alarm system will put in the common place in which all peoples can hear, sensors which detect the motion of the animals will send the data/information to the operational centre and the alert system will activated by them in the centre and also the message will send

to the mobile users. Compared to the existing system by passing high voltage electricity in the fences across the forest edge. This proposed system will provide good to both wild animals and the peoples.

### 2. INTRODUCTION AND OVERVIEW:

The enormous increase in human population in Asian countries like India propelled by agricultural and industrial growth has led to the conversion of forest land into human settlements. Due to this, the wild animals face an acute shortage of water and food. Further, wildlife is greatly affected due to deforestation forcing them to move into the human habitats. It creates great loss to property and life when wild animals enter cities. This is a cheaper system which provides good to both wild animals and human beings. . Human - Animal Interaction can prove dangerous for both the species and therefore, there is a need for an intelligent surveillance and alert system. We are using Raspberry Pi 2 for this project as it is a single board computer and low cost. It has a huge user base and it operates on open source software

#### 2.1.Passive Infrared Sensors:

Passive infrared motion detectors (PIR) detect emitted infrared energy – given off by humans and animals in the form of heat. When there is a sudden increase in infrared energy, an alarm is sounded. 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.

When an object, such as a human, passes in front of the background, such as a wall, the temperature at that point in the sensor's field of view will rise from room temperature to body temperature, and then back again. The sensor converts the resulting change in the incoming infrared radiation into a change in the output voltage, and this triggers the detection. Objects of similar temperature but different surface characteristics may also have a different infrared emission pattern, and thus moving them with respect to the background may trigger the detector as well.

2.2.Raspberry pi 3:

It is a Credit card sized computer that plugs into various devices. It is a capable little computer which can be used for electronics, sensors etc...

3.ARCHITECTURE DIAGRAM FOR PROPOSED SYSTEM:

The Architecture diagram of the proposed system includes the Raspberry pi3 module, Sensors, Operational Centre, speakers and solar Panels for Providing power to the sensor tower.

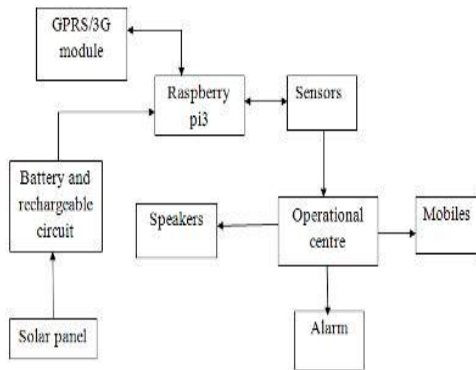


Fig:1 Architecture diagram for a proposed system

4. Working:

Sensor tower will be kept at a boundaries of the forest regions .We propose a sensor network system to create an alert system. The sensor tower is present at the boundary of the forest to track movement of wildlife and humans near the boundary. The sensor tower is made up of Raspberry Pi 3 (RPi 3) and other components. RPi 3 as it is a single board computer

with Linux operating system. RPi 3 has 40 GPIO pins which can be used to control and get information from the sensors. We use PIR sensors for motion detection. An alternative can be to use IR camera but for simplicity we use PIR sensors. The sensor tower also has GPRS/3G module to connect to the Operational center. The boundaries of the forest have GPRS connectivity as they are closer to the human population. This makes communication easier. If a motion is detected by the PIR sensor, the data will send to the Operational center. Then the Operational centre will activate the speakers and the message will send to the concerned officials and the peoples who are located in the forest areas.

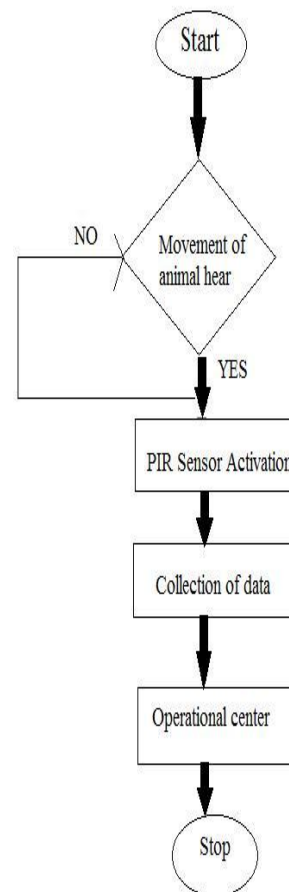


Fig: 2- Flow chart for the proposed system

## 5. ANALYSIS OF EXISTING SYSTEM:

- The Existing System provides alarm system that is operated only by the officers after entering of animals in to the land.
- This system put the electric cables or Trap near the boundary areas such that when the animal or humans that gets in to the cables it will get affected.
- Also in some areas there is no such alarms or cables.



Fig:3-Animals Entering in to the land and attacking humans

## 6. ADVANTAGES:

- This proposed system is used to detect the animals by without affecting them.
- Deaths caused by the animals to humans can be minimized.

- Because of the sounds produced by the speakers near the sensor tower, Some animals will not enter in to the areas.
- Hunting of animals can also be minimized.
- Wild animals can be protected.

## 7. CONCLUSION:

The proposed solution for wildlife alert system presents cost-effective, reliable and technically simple solution. This approach believes that using various such IOT devices the environmental balance can be achieved by saving the wild animals from getting harmed. The proposed method is also easy to implement and environmental friendly. It can save human life and property. We have various scope for improvement in our model such as capturing the image of the animals that is sensed by the sensors, better motion detection using image processing with night vision cameras. We can come up with more advanced approaches to completely avoid the wild animals from leaving forest boundaries using safer methods than electrical fence.

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