Internet of Things (IoT) based Animal tracking and health system for road and animal safety (Case study India)

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Abstract

Internet of Things is one of those emerging technologies and having it's huge and vast applications everywhere, in medical, education, government, business, industry, etc. in every sector. We have seen it's implementation in tracking of vehicles and as well as humans, on the other side we have also seen it's implementation in health monitoring systems with the help of various body sensors. So, a mixed combination of the tracker and health system can be used for animals, so, that road accidents causing due to stray animals coming on road can be can be tackled and at the same time their health status can also be tracked to provide them necessary medical services on time.

Introduction

We have serious problems with stray animals on road. Almost half of the serious and life taking accidents, have a major cause of stray animals, these accidents mostly result in the death of victim as well as the poor animal.

There is almost zero observation on stray animals and cattle, which results in problem that they come upon the roads and highways, during night time this becomes a more serious problem. Even endangered species animals like Tiger, Lions, Bear, etc. they also come upon the roads and railway tracks and loose their lives.

If we talk in reference about country like India, Government has Kanji houses (Shelter homes) for the maintenance of these stray animals, which comes under the department of Municipal Corporation. But there doesn't have a system to continue monitor over it and keep its tracking report because of which it had been observed that municipal catchers sometimes catch the same animal in a repetitive circle as they are paid according to the number of animals catched.

And due to these type of works, cattle and animals come upon the roads and cause in some serious life taking accidents.

Beneficiaries: All the roadways using peoples, Government, and the stray animals.

Value of Results: Decrease in accidents by stray animals.
.   Care of stray animals.

Background

Present methods: There is no such present method for tackling such serious problems, Municipal Corporations provide compensation to the victims but that cannot pay a life which is lost, Some Municipal Corporations have around 50 lakh budget per year for such cases, And for the stray animals some Municipal Corporations have catchers who get paid

according to the number of catches, which cause in catching the same animal again and again and problem remains at its place. Totally if we observe there is no such complete solution for the problem to maintain the stray animals in any city in India which cause death of both victim and the animal on a large amount.

Proposed Solution: The basic solution which comes is to monitor the stray animals, their location as well as their health should be monitored. They should be kept under the observation of Municipal Corporation (Kanji houses), and the information regarding their location and health should be available over the web. Availability of their location and health to everyone would result in the better working of the Municipal Corporations and it's employees.

Novelty of Approach: In current methods of solution the work starts after the accident, it can't bring back lives of the victim and the animals, but this solution focuses primarily on, not involving such conditions it removes the cause so not to care about the effect. At the same time monitoring of the stray animals will be beneficiary to them also.

1. It will save the lives of peoples and animals.
2. It would help in better care of the stray animals.

Architecture

The system completely combines of two parts Hardware and Software.

Hardware: The hardware system comprises of basic health care sensors, GPS modules and a connecting microcontroller with Wi-Fi module.

Health care sensors will include a temperature sensor, a heart rate sensor and a pulse rate sensor.

Software: the software would generally require an web based application connected to a data cloud, which would work in collaboration with the Gmaps API, for the present locations of the animals and will also show the health status and report of the animal, which will be in control of the Municipal Corporation and the data would be visible to the local peoples, visibility of data to local peoples will ensure the transparency in work.
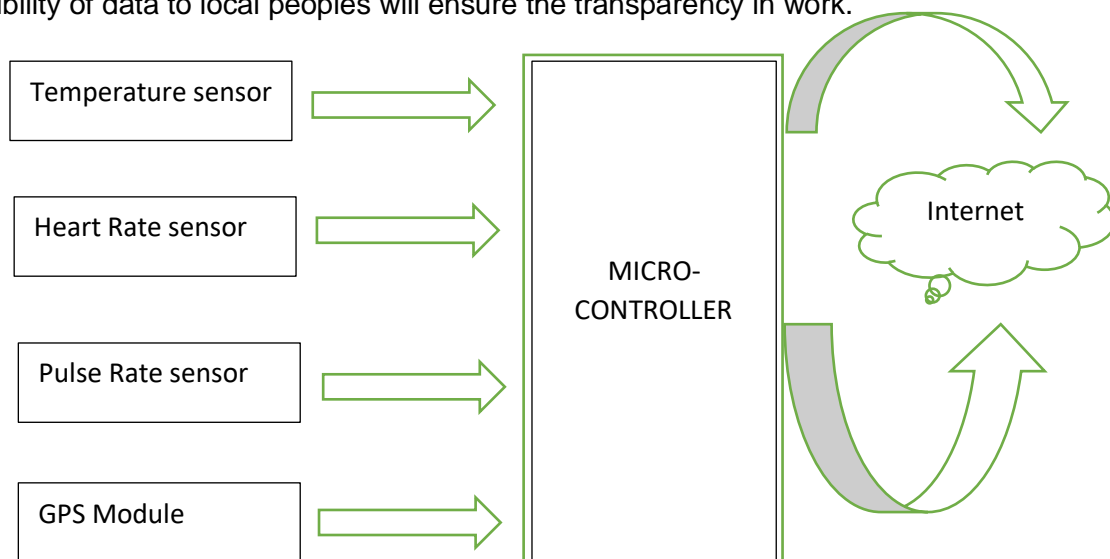
Hardware Module architecture and working
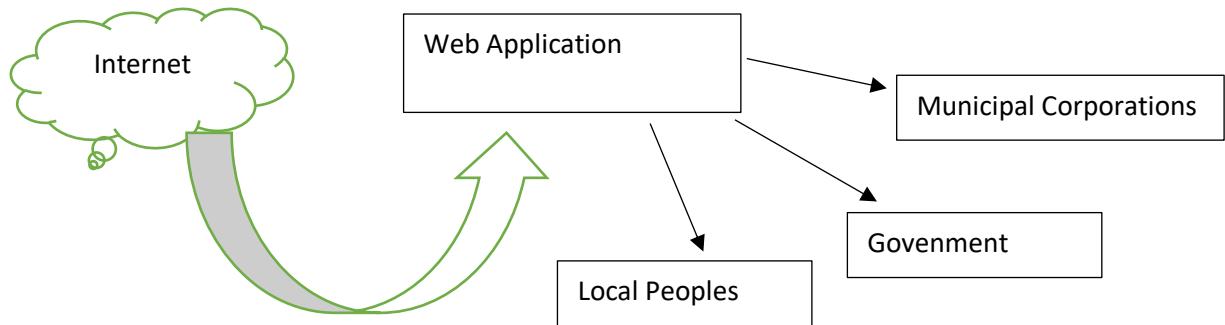
Application System Architecture and working

Conclusion

In the mentioned method we are dismissing the cause of the accidents and as we have seen earlier we are not having any method or approach to come up with this type of problem, generally compensations are provided but none can save a life. As, well as due to the tracking of stray animals their maintenance will also work under the government.

Reference

[1] https://data.gov.in/sites/default/files/dataurl20072016/rs_session-239_AU89_1.1.csv