Traffic Stimulator Implementation Models Based on IoT Technology

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ABSTRACT

IoT (Internet of Things) is the network of physical objects-devices, vehicles, buildings and other items embedded with electronics, software, sensors, and network connectivity-that enables these objects to collect and exchange data. The internet of things allows objects to be sensed and controlled remotely across existing network infrastructure. According to the Gartner, 260 million objects will be connected by year 2020. Several companies and governments have tried to make references with IoT in initial times, but nowadays in manufacturing, retail and SOC (Social Overhead Capital) industries, successful best practices are built recently. In this paper, I summarized tangible IoT based service models which are helpful to academic and industrial world to understand IoT business.

1. INTRODUCTION

In this paper, the definition, status, components, and standards of IoT (Internet of Things) are introduced, and possible business models that can implement IoT in a traffic stimulator are examined. This study was conducted to present practical service models using IoT in line with domestic circumstances, and, thereby, it is expected to contribute to academic circles and related industries.

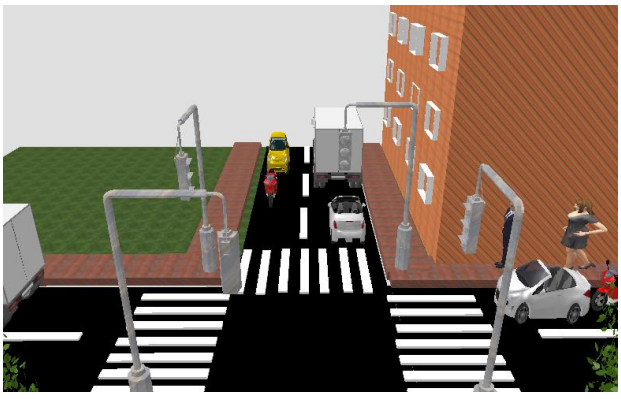

Fig. 1. Image with sonar and receiver near the traffic pole.

2. RELATED WORK

Many researchers tried to improvise Smart transportation, Smart Utilities, Smart public health, Smart environment. But not trying to smartly control the traffic lane and the day by day increase in the traffic.

3. TRAFFIC STIMULATOR IMPLEMENTATION MODELS BASED ON IOT

3.1 SERVICE OUTLINE

Recently, many local governments have been aiming to implement an IoT-based smart city through the construction of a test bed for IoT verification and an integrated infrastructure. This movement also corresponds to the creative economy that is emphasized by the Indian government. In this chapter, Traffic stimulator implementation models based on IoT that can be implemented by local governments are described through examples.
Traffic simulation or the simulation of transportation systems is the mathematical modelling of transportation systems (e.g., freeway junctions, arterial routes, roundabouts, downtown grid systems, etc.) through the application of computer software to better help plan, design and operate transportation systems.
“Traffic Stimulator” is an autonomous designed traffic control, which helps a lot in reducing traffic and management of traffic signals with advanced technology.
In India traffic is major problem which leads to stress, and it is caused due to over growth in population and the needs and demand of humans.
To solve this problem, we introduce this “TRAFFIC STIMULATOR” which smartly judges the density of vehicle crowd and according to it control the traffic signals.
The Traffic Stimulator system includes the Arduino Uno Microcontroller and all of the sensors required to navigate the robot around its environment.

3.2 METHOTHODOLOGY

The Traffic Stimulator is designed:
There are sonars placed at every 250m distance from the traffic light
The sonar sends/transmit and the receiver near the traffic signal receives.
When the receiver is unable to detect or receive data from the receiver that means vehicles are blocking the way, which in turn implies that the traffic is reached to that particular range
Then the traffic signal allows that particular lane to move for a longer duration.
When the signal light is red and if any vehicle breaks the signal, and moves then the camera captures that particular vehicle image and forward it to the traffic management department.
If any vehicle tends to move while humans are crossing road then the camera takes snaps of that particular vehicle.
If the camera detects any ambulance or police vehicle with the siren, then it immediately stops all lane and allow the lane to move in which the ambulance or police vehicle is resent.
All the streets light will be made automated controlling by sensors which responds to the intensity of sunlight and then according to that it switches on and switches off the street light.
All the electrical street light can be converted to solar street light thus decreasing the power consumption.

Fig. 2. Proposed methodology

3.3 PREPROCESSING

- At the end of the day, all the snaps gather up and then using an algorithm the vehicle numbers are identified and the complaint gets registered for every vehicle.

5. CONCLUSIONS

This study is significant in outlining general information about IoT, such as definition, market size, and status of IoT, which has become a hot IT topic nowadays, and in presenting applicable IoT business models to help business entities and research institutes participating in related projects build a smart city as part of the future vision of local governments by reflecting the new information paradigm of IoT. A limitation of this study, however, is the lack of available data in Korea that hinders the required empirical analysis on the benefits of IoT technology. We hope that more research in this field will be conducted in the future.
This Traffic Stimulator can be proved boon for the society, where traffic causes a lot of stress, day by day increase in pollution and wasting up of energy like electricity. It brings change in the environment and makes a city more developed and smart these technologies for betterment of a country.