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SMART CCTV SURVILLANCE BY THE USE OF IoT FOR REDUCING TRAFFIC PROBLEM

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Abstract:

The internet of things (IoT) is the revolutionary thing in the coming years and by the small changes in the existing systems we can develop the many interesting and smart things. One such thing can be said as smart city feature of using CCTV camera for not only the security purpose but also for traffic estimating purpose in a particular road which can help to reduce the traffic which in turn gives the less pollution levels. The simple things mentioned here are Raspberry pi 2 boards and CCTV camera, smart phone with internet facility. The mobile is provided with an app for accessing all the CCTV cameras across the path we want to take and helps us to choose the path with less traffic. The above combination of CCTV camera, Internet and Mobile ultimately solves the traffic problem.

Introduction:

Recent technologies are mainly concentrating on size miniaturization and less power consumption. The IoT is also such revolutionary thing which is basing on smart application with the existing technology. Ipv6 provides help to existing systems to make them smart for usage. The desire to know the present situation at a particular place from another place can be made possible by the use IoT. For example, a route that we daily use, take as office route, a route can be of multiple paths. Let's assume that the path is provide with a security cameras and each of that security camera is provided with an ipv6 address and the coding is done to make the video transmission to cloud by using raspberry pi model 2 board. So that the user can access the transmission of that video output and analyze the path. so that the user can take the required and best path for travelling. It can include as a part of that city maintenance operations. The Overall working process is Shown in Fig1.

IoT Interfacing:

The CCTV cameras being used now days are for security purpose which is only accessible to police department people. By making it accessible to everyone it can be useful for various personal and public applications and promotes

better quality of life. The video transmission requires Live Transcoding API (application program interface) protocol which can be implemented by embedding code into the Raspberry pi 2 microprocessor. Mobile devices can be used to access the video transmission and It also can directly implement into the latest major car models which makes them much smarter.

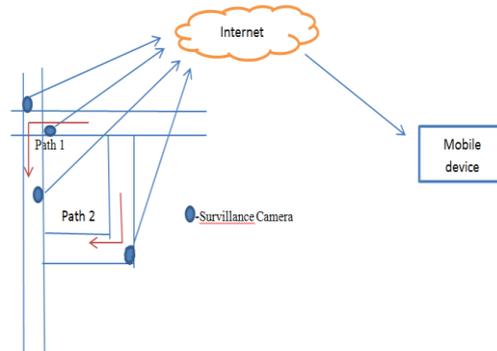


Fig1: Overall Working Process.

The transmission is multicasting process. In which the data is accessible to the required number of users. The camera continuously sends the live data and every one can access the live data. As it only for observation purpose the video frame rate is reduced to almost minimum level. In order to make the transmission more effectively.

CCTV Arrangement:

The camera initially consists of power input and output cable. The IoT system has yet to be implemented. The process needs three tier architecture which includes camera with IoT system and an internet service and a mobile for receiving, observing data. An app is designed to make the accessing possible and to store the data for various purposes. The device is provided with a particular id and password to make it authenticate. The minimum required speed for internet is 512 kbps. This is the basic speed in a normal connection of the 3g spectrum. The Raspberry pi 2 (Rp2) board is interfered with camera and Internet connection.

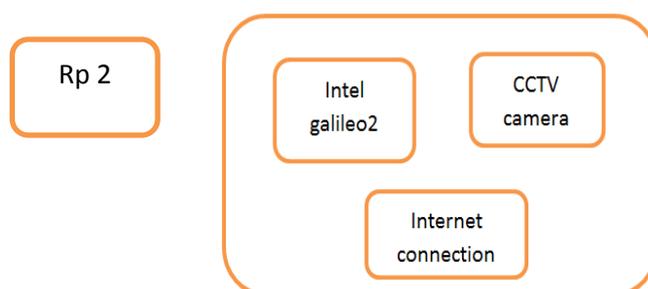


Fig2: CCTV with Microprocessor and Internet.

Processing Section:

The Raspberry Pi 2 board is responsible for overall process presented in this article. The Raspberry Pi 2 contains a quad-center ARMv7 CPU, 1 GB of RAM. It essentially run an altered variant of the Debian Linux circulation named Raspbian that was made to keep running on the ARMv6 CPU (and higher).The board is using 0.10 version of GStreamer . For the video Processing with the video libraries .The board is connected with internet connection and video camera output. The producing data is sent over the internet. An app is designed to access the live streaming to the mobile or any other accessible devices. The app is designed by using html5 coding. The video streaming can be at the frame rate of 50 frames per second. Which is very useful for analyzing the traffic and also for crime detection purpose.

Definitions:

IoT:The Internet of Things (IoT) is the system of physical articles—gadgets, vehicles, structures and different things which are inserted with hardware, programming, sensors, and system network, which empowers these items to gather and trade information.

GStreamer: GStreamer is a library for building diagrams of media-taking care of parts. The applications it bolsters range from straightforward Ogg/Vorbis playback, sound/video spilling to complex sound (blending) and video (non-direct altering) handling.

API: (Application Program Interface) is an arrangement of schedules, conventions, and devices for building programming applications. The API indicates how programming parts ought to cooperate and APIs are utilized when programming graphical client interface (GUI) segments.

Conclusion:

Time saving in traffic and reduced pollution are the two main outcomes of the proposed system. One cannot waste his time in traffic and produce more pollution by slow movement of the vehicles. All that cost is a few MB of data over a network and which can be deleted after that purpose. By making use of the IPv6 and existing Technologies like Raspberry Pi 2 . The other advantages of the smart CCTV camera is that it can be used in homes and offices or an individual networks .Since it is using Internet connection it can be accessed from anywhere around the world.

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