



INTELLIGENT AND SUSTAINABLE URBAN LIGHTING SYSTEM

DESCRIPTION OF THE TECHNOLOGY

Researchers have developed a system that allows to control the urban lighting in a city in an intelligent way, managing to reduce its energy consumption.

Urban lighting in cities is a necessity, but it also involves a considerable cost for the administration, and light pollution has a significant impact on the environment.

Until now, urban lighting systems have focused on turning on the luminaires at certain predetermined times. This supposes a continuous and uniform illumination of the area during several hours.

The proposed system is based on the combination of different elements of the Internet of Things (IoT) paradigm and Cloud Computing for the design of a highly scalable system that is capable of graduating the light intensity based on the human presence in an area.

The system is based on the use of the large number of traffic and security cameras on public roads to detect human presence.

For this, a distributed system is defined. The system architecture is composed of different levels:

- At the first level are the data acquisition sensors, consisting of video cameras. In the other hand, there are the actuators that consist of variable intensity luminaires.
- At the second level are the Cloudlet processing platforms that will be deployed in the nearby environment.
- On the third level are the remote servers accessible via Internet and which control the operation of the system.

MARKET APPLICATION SECTORS

The market application sector is the public lighting management entities. Therefore, companies interested in this technology can be:

- Information technology enterprises.
- Installation and maintenance services for urban lighting networks.
- Town councils and local entities.
- Companies, shopping centers, health centers and entities that manage large spaces that have a considerable network of luminaires to illuminate their surroundings.

TECHNICAL ADVANTAGES AND BUSINESS BENEFITS

- The system allows advanced analysis of video and digital images based on remote processing that guarantees greater security regarding the real presence of people in the environment. This method is more effective than detection by infrared sensors.
- The system produces a considerable reduction in energy consumption by reducing lighting when there is no human presence in the area. This happens during most of the night.
- The system does not require an added infrastructure, since it takes advantage of existing image capture systems on public roads to analyze the presence of people.
- The processing of images remotely and in a distributed manner is an advantage because it allows the volume of analysis required to monitor a wide area.
- The system is highly scalable and can be used both in small spaces and in large cities.



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- The system allows the integration of additional services under the same platform.
- The system combines different elements of the Internet of Things (IoT) and Cloud Computing paradigm. The computation methods developed take advantage of this infrastructure to distribute the necessary processing between acquisition devices, cloudlet platforms and remote systems through the application of mobile processing techniques in the cloud or Mobile Cloud Computing.

CURRENT STATE OF DEVELOPMENT

The research group has developed a functional prototype of the system. The system is ready to be deployed in an urban area. Prior to its implementation, they will analyze the characteristics and specific requirements of the company to determine the best way to implement the system.

INTELLECTUAL PROPERTY RIGHTS

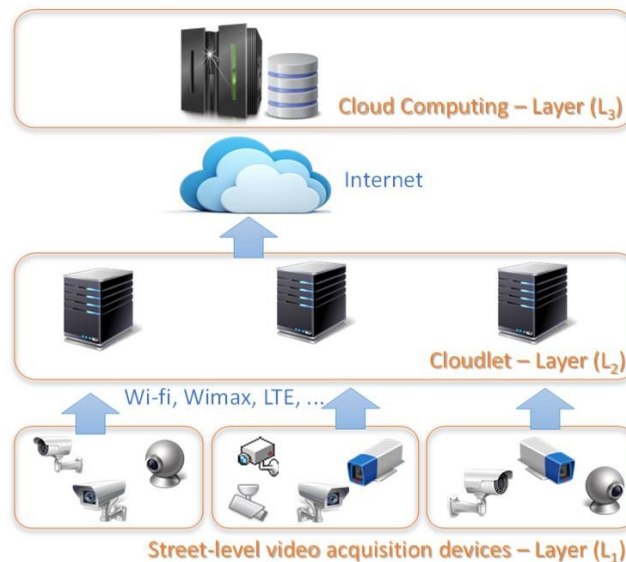
This technology is protected by patent application.

- Patent title: "Sistema y método de iluminación inteligente"
- Application number: P201930387 - Date of application: 30/04/2019

COLLABORATION SOUGHT

The researchers are looking for companies interested in acquiring the technology through a license agreement.

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Image 1: Design system