

Accepted Manuscript

A hybrid approach, Smart Street use case and future aspects for Internet of Things in smart cities

Syed Hassan Ahmed, Shalli Rani



PII: S0167-739X(17)30994-9
DOI: <https://doi.org/10.1016/j.future.2017.08.054>
Reference: FUTURE 3649

To appear in: *Future Generation Computer Systems*

Received date : 11 May 2017
Revised date : 20 July 2017
Accepted date : 24 August 2017

Please cite this article as: S.H. Ahmed, S. Rani, A hybrid approach, Smart Street use case and future aspects for Internet of Things in smart cities, *Future Generation Computer Systems* (2017), <https://doi.org/10.1016/j.future.2017.08.054>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

A Hybrid Approach, Smart Street Use Case and Future Aspects for Internet of Things in Smart Cities

Syed Hassan Ahmed¹, Shalli Rani^{2,*}

¹School of Computer & Engineering, Kyungpook National University, Daegu, Republic of Korea.

² Department of Computer Science, S.S.D. Women's Institute of Technology, Bathinda (Punjab), India.

Emails: ¹s.h.ahmed@ieee.org, ²shalli@ssdwit.org

Abstract—Internet of Things (IoT) has led to the development of smart projects by connecting heterogeneous devices and has accelerated the global growth by providing digital services to the users. The Smart City Project is very complex concept and has many hurdles in its way and many of the hurdles (Digitization services) can easily be solved by IoT. Urban IoT, is designed to support the future vision of smart cities which supported the new hybrid technologies and provide the value added services to the citizens. In this Urban IoT framework the first layer is Data Layer. In Data layer, sensor platform uses the optimized AODV-SPEED protocol (Hybrid Approach), proposed in this paper. Hybrid approach has shown improvement over delay, energy, miss ratio of the packet transmission and packet delivery rate over traditional SPEED protocol which is suitable for IoT applications. This article also identifies the framework, challenges and trends of Smart city IoT and use case for the smart street highlights the importance of proposed structure. Furthermore, Smart City projects are discussed to recognize the importance of IoT in smart cities and its future.

Index Terms—Framework of Internet of Things; Smart City; Virtual World; Smart Objects; Hybrid Approach; AoDV-SPEED

I. INTRODUCTION

The internet of things (IoT) is the network of connected physical devices, objects and sensors to offer many services to the people. These objects are connected through information and communication building blocks. Today IoT has become the most discussed part of every business due to its benefits and this term was first used in 1998 [1]. It is expected that around 3/4th people will live in smart cities and smart surroundings till 2050 [2] and IoT can play a great role in the implementation of the smart city concept. For welfare of people in terms of economics, social and environment, smart city can provide a good platform. Wireless sensor network is the sensing part of IoT which can be combined with urban infrastructure by forming the special skin cover for IoT building blocks. IoT has boosted the development of many applications which makes the use of large amounts of data generated by heterogeneous devices to provide emerging services to the people, various private and public organizations. The applications include the areas of smart home, smart environment, smart energy management and smart grids, smart agriculture and smart traffic management, etc. Heterogeneity of the devices

has acknowledged the potential solutions for all application conditions alarming challenges. These challenges lead to the propagation of various and sometimes unsuited proposals for the practical implementation of IoT. IoT intends to make the internet more submerged and persistent. With the interaction of heterogeneous devices like surveillance cameras, actuators, transport vehicles, domestic devices etc., the IoT will promote the various applications. From these applications the smart city concept is the most interesting idea. Smart City uses the concept of information and communication technologies (ICT) to make the city services more responsive, aware and efficient. To increase the effectiveness of city administration, it is important to understand the need of urbanization. Today only a few organizations have live monitoring of the urban processes. The scheme trail behind is a collection, filtering, analyzing and offline processing of data with action, and these processes are repeated again for the whole system. Collection of data is very costly and is very hard to repeat it. Increased demand over municipalities to integrate smart techniques for collection and action over real time data has lead to the use of IoT which is platform independent and can help in the management of real time data. With advancements in computations and sensing methods, data can be extracted and evaluated for the useful decision making. This will aid people in decision making policies and in turn conversion of conventional cities to smart cities. There is not yet widely accepted and recognized definition of Smart City but the objective is to make best use of public resources to increase the quality of services (QoS) for the public and to cut the cost for government organizations. This aim can be fulfilled by smart urban IoT due its simple, unique and cheap access to public services in excess and to provide the transparency to the public. It may transport many advantages, in the traditional public services like waste management, monitoring of buildings, transportation, lightning, parking, etc. It will enhance the participation of people in public administration and they will be more aware about the status of the city. It is the great hope of the smart city life, but existing services and applications required to be optimized. Researchers are proposing different types of architectures to achieve the dream of smart city and one of them is cognitive framework [3]. This framework plans to hide the heterogeneity of things, to ensure resilience, to assess proximity and to use the cognitive technologies.

*Corresponding author, shalli@ssdwit.org.

Download English Version:

<https://daneshyari.com/en/article/6873369>

Download Persian Version:

<https://daneshyari.com/article/6873369>

[Daneshyari.com](https://daneshyari.com)