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An Efficient Algorithm for Media-based Surveillance System (EAMSuS) in IoT Smart City Framework

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Abstract

Internet of Things (IoT) is the new technological revolution that aspires to connect all the everyday physical objects to the Internet, making a huge global network of uniquely things which can share information amongst each other and complete scheduled tasks, bringing significant benefits to users and companies of a Smart City (SC). A Smart City represents a new future framework, which integrates multiple information and communication technology (ICT) and Internet of Things (IoT) solutions, so as to improve the quality life of its citizens. However, there are many security and privacy issues which must be taken into account before the official launching of this new technological concept. Many methods which focus on media security of wireless sensor networks have been proposed and can be adopted in the new expandable network of IoT. In this paper, we describe the upcoming IoT network architecture and its security challenges and analyze the most important researches on media security and privacy in wireless sensor networks (WSNs). Subsequently, we propose an Efficient Algorithm for Media-based Surveillance System (EAMSuS) in IoT network for Smart City Framework, which merges two algorithms introduced by other researchers for WSN packet routing and security, while it reclaims the new media compression standard, High Efficiency Video Coding (HEVC). Experimental analysis shows the efficacy of our proposed scheme in terms of users' privacy, media security, and sensor node memory requirements. This scheme can be successfully integrated into the IoT network of the upcoming Smart City concept.

Keywords Encryption Algorithm, HEVC, IoT, Smart City, Video Surveillance Systems, WSN.

1 Introduction

Last decade, Internet of Things (IoT) came gradually into our daily routine, thanks to the evolution of the wireless communication technologies, such as RFID, WiFi, 4G, IEEE 802.15.x etc [1]. IoT is a