Design of Resilient Smart Systems for Sustainable Cities and Communities

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Abstract:

Smart systems are appearing in everyday life. For example, smart phones and smart watches. They ease the task of the user in a several ways. In the similar line, the design of smart systems for rural and urban area can contribute the sustainable development for the communities. The smart system include smart water conservation and management systems, smart traffic lights, smart street lights, smart bus stops, smart tilt detection of pole, trees and buildings, smart drainage management system ,smart roads, smart toll booths on highways, smart farming, smart homes, smart vehicles and green buildings. The paper presents the practical implementation of the resilient digital smart bus stop with real time information for passenger as well as weather. The case study of the rural area has been taken up, it has been shown to be effective for sustainable communities. The paper also demonstrates the simulation and implementation of smart drinking water leakage detection system using computer vision approach. In this case, the waste of water has been detected and corrected by smart mechanism. Thus, making the sustainable water distribution system.
These two cases highlights the sustainability of the smart cities further with using Internet of Things and use of ambient energy for powering the devices. The use of new and renewable energy for such smart systems will make them sustainable for the future cities. The solar, wind, thermal, RF and other modes of energy could be effectively used in the development. The development in the field of the Internet of Things and Machine to Machine communication has open up new avenues for the interconnected world. These leads to cyber physical system, physical mobile satellite systems and cyber physical social system. In the sustainable cities the Satellite based Internet of Things (SIoT) are going to play the significant role in developing smart cities using LEO satellites.

Key Words: Smart System, Internet of Things, Digital Infrastructure, Smart Bus Stop, Smart Water Leakage Detection and Sustainable Cities, M2M Communication.