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SCOPE OF SPACE TECHNOLOGIES IN INTERNET OF THINGS (IOT) APPLICATIONS

Abstract

Internet of Things (IoT) is the new buzzword in the world of engineering technology. Whether it is automotive industry or home automation technologies, there is no escaping the mention of IoT as "The Next Big Thing". Some experts even go as far as calling the age of IoT as the inception of a second industrial revolution. However, space technologies have been connecting remote devices for decades now.The scope of integrating earth-based clusters of connected devices to space applications is immense.

This paper explores applications with integrated IoT based earth-bound systems communicating with one or more space systems.The concept is discussed with an example application, and analyses provided with the help of hybrid automata modeling tools. Hybrid automata are mathematical models for precisely describing systems in which digital processes interact with analog processes. A hybrid automata model is a combined specification of discrete and continuous behaviors; it is a method to model and analyze dynamic systems that comprise both digital and analog components.

The example discussed in our work is an automated irrigation system, which optimizes the usage of water for agriculture. A major portion of the world's freshwater resources is used for agriculture and this percentage will continue to be dominant because of population growth and increased food demand. Strategies based on advanced science and technology is imperative to efficiently utilize the available water resources. In addition to automation, the system also facilitates remote monitoring of the farm from any distant location. The automated irrigation system employs the IoT concept incorporating ground systems and space systems.