Abstract

In infrastructure and industrial plants the rapid growth creating environmental issues like pollution (Air, Water, Noise), climate change, malfunctioning and has greatly consequence for the requirement of an, operationally adaptable, efficient, cheap and smart monitoring systems. In this context where combination of many challenges of computer science, wireless communication and electronics; the Smart Sensor Networks are an emerging field of research. In this paper a solution to monitor the air and noise pollution levels in industrial environment or by using wireless embedded computing system a particular area of interest is proposed. The technology like Internet of Things (IoT) is included in the form of solution which is outcome of merged field of computer science and electronics. For monitoring the fluctuation of parameters like noise and air pollution levels from their normal levels in this case the sensing devices are connected to the embedded computing system. For the requirement of continuous monitoring, controlling and behavior analysis this model is adaptable and distributive for any infrastructural environment. The working appearance of the proposed model is evaluated using prototype implementation, consisting of AVR UNO board, sensor devices and MATLAB with AVR
hardware support package. For two or three parameters like noise, CO and radiation levels the implementation is tested with respect to the normal behavior levels or given specifications which provide a monitoring over the pollution control to make the environment smart and ecofriendly. The basic mission of the Air Quality Planning and Standards is to preserve quality of air. The level of pollution in air can be measured by measuring the pollutants such as humidity level, temperature level, dust level, CO level, smoke level etc present in the air of that area. Here we propose an air quality pollution monitoring system that allows us to monitor and check live air quality in a particular areas through IoT.

With the fast growing technology, it would be great to get to know about our surrounding weather parameters in this widely connected environment of internet when one can easily access the rarest and the farthest information at one’s own fingertips. This project is based on IoT (Internet of Things), which is an emerging field in which all the devices are connected to a channel made by self (private channel). The channel is used to view the weather parameters with unique API key of channel of a particular user. Every channel has both Read and Write API keys to get the access. Wi-Fi module, temperature, humidity, gas, and dust sensors are interfaced with the Xmega 2560. The user is prompted to provide the API key of channel. ESP8266-01 reads the key and sends it to the Xmega 2560. If the key is matched, then the data transmission can be carried out between the channel and the microcontroller. The module is connected to the Wi-Fi through some AT Commands.

References


11. B.B.P. Rao, P.Saluia, N.Sharma, A.Mittal, S.V.Sharma, "Cloud computing for Internet of Things & sensing based applications," in Sensing Technology (ICST), 2012 Sixth International Conference, IEEE


Index Terms

Computer Science
Information Sciences

Keywords

Xmega, Xbee Nodes,