Review and Applications of Wireless Sensor Nodes for Environmental Data Monitoring and Analysis using Internet of Things

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Abstract: *The use of sensors in continuous monitoring of environmental data has the potential to provide sustainable solutions to the modern effects of extreme growth in industrialization, urban cities, and population, which pose a monumental threat to the environment. Big data generated from these wireless sensor nodes need to be cleaned and analyzed using the latest techniques of machine learning and data analytics. This work reviews the common Internet of Things architectures to monitor different environmental factors like temperature, humidity, air quality, and light sensors. These customizable sensor nodes can be used in various surroundings like agriculture fields, pollution control centers, waste management and thus help in the timely detection of unusual environmental parameters. This work also discusses in detail the most common system consisting of two sensor nodes and a gateway. The gateway collects data from sensor nodes at regular intervals and then shares that data for private channels so that we can analyze the data and make the appropriate decisions. The analysis follows the review of various applications. Analysis forms the basis of decision making which provides actionable items towards making a better environment. Finally, the steps involved in data analysis and decision-making are suggested.*

Keywords: Wireless Sensor node (WSN), Internet of Things (IoT), environmental monitoring

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