

REVIEW ARTIKEL

Topic	: GREEN IoT
Title	: Greening and Optimizing Energy Consumption of Sensor Nodes in the Internet of Things through Energy Harvesting : Challenges and Approach.
PUBLISHER	: AIS Electronic Library (AISeL)
Author	: David Airehrour, Jairo Gutierrez, Sayan Kumar Ray.
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Scope	: How to Optimize Energy Consumption of Sensor Nodes Callenges and Approach.

Introduction

The **Internet of Things (IoT)** is a system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers (UIDs) and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction. IoT is a variety of things (devices), such as radio frequency identification (RFID), sensors, actuators, mobile phones, drone, etc., to communicate with each other and work together for common goals.

Green Internet of Things basically focuses on the energy efficiency in the IoT principles. Green IoT is defined as the energy efficient ways in IoT either to reduce the greenhouse effect caused by existing applications or to eradicate the same in IoT itself

Wireless Sensor Networks (WSN) consists of multiple interconnected and organized sensor nodes (up to several thousand even) that can process data and communicate with each other. WSN are invaluable resources for realizing the IoT vision with the sensor nodes becoming essential components in the IoT architecture.

Objectives

This journal discuss about optimizing energy consumption of Sensor Nodes in order to realize Green IoT, there are many ways to realize Green IoT and this journal spesifically only discuss about How optimizing energy consumption of Sensor Nodes can make big effect to IoT and make IoT more environmentally friendly.

This journal explore various energy measurement models, modelling metrics and green energy sources for IoT sensor nodes. However, determining the power consumption of an IoT node and how much of

this energy is depleted during communication and processing will help identifying potential wasteful energy consumption sources with the aim to optimize the energy cycle of an IoT sensor device.

Energy harvesting as a solution for greener IoT. Energy harvesting is the process of creating energy from environmental sources including thermal energy, salinity gradients, solar power, kinetic energy and wind energy. The energy is converted and stored for use by various sensory devices such as wearable devices, WSN devices and even IoT devices. So, according to this journal or author, if we can make Energy harvesting we can reduce the use of batteries and fuel, and also good for environment because it also reduce co2.

It is expected that for the IoT vision to become effective the integration of various technologies of low power devices and the improvement of battery efficiency will create the enabling environment for the swift development and take off of the IoT trend.

Subject

Subject of this journal is Wireless Sensor Networks as the most energy consuming devices in IoT, and Energy Harvesting to make WSNs more environmentally friendly.

Challenge

-The challenge in IoT is how to have an efficient connectivity among IoT nodes while optimizing the limited energy of these nodes since communication among these nodes is the most energy consuming task on these IoT nodes.

- looking for energy sources other than batteries.

Approach

- Using low-powered communication technologies
- Using multiple heterogeneous radio interfaces that enabling them to concurrently transmit data to IoT servers. For example, in the IoT development platform introduced by Open Interconnect consortium and allseen alliance, gateways essentially utilize a low-power short distance radio to communicate with close IoT sensor nodes and a long distance radio to communicate with and IoT network server.
- Ambient energy (energy harvesting) from the physical environment could be possible as a replacement of conventional battery.

Suggestion

In order to make WSNs nodes lifetime much longer and optimize energy, We can use MECA leveraging the clustering principle and a teiner tree algorithm. Through extensive numerical experiments, it shows that the proposed scheme can achieve much longer network lifetime compared to the typical WSN deployment scheme; thus is preferable for green deployment of IoT.(A Novel Deployment Scheme for Green Internet of Things, 2014)