*International Journal of Engineering & Technology*, 7 (4.6) (2018) 453-456

International Journal of Engineering & Technology

*Website: www.sciencepubco.com/index.php/IJET*

***Research paper***

# Power Management for Hospitalization Using Microcontroller BasedWireless Multimedia Sensor Networks

**G.Gomathy[1],K.Sujatha[2]**

[1]*Dept. of EEE,Dr.M.G.R.Educational Research Institute University,Maduravayal, Chennai, India.*
[2]*Dept. of EEE,Dr.M.G.R.Educational Research Institute University,Maduravayal, Chennai, India.*
**Corresponding author E-mail: gomathypaul@gmail.com*

## Abstract

The Multimedia is a combination of different usage of data such as text, audio, video and image. The wireless sensor nodes are activated to focus area of the hospitalization with monitoring of the microcontroller to the entire network.The Multimedia is a combination of different usage of data such as text, audio, video and image. The wireless sensor nodes are activated to focus area of the hospitalization with monitoring of the microcontroller to the entire network.The amount of sub-space of the congestion windows are needed to be searched in reconstruction algorithm iteration are sparse model collaborating design reduced, and the number of measurement of mobile sensor nodes are needed for reconstructing network data accurately. The current multimedia sensing network compressed for sensing algorithm that can effectively reduce the transmission for multiple kind of data such as text, image, video or audio of scanning reports are generated in the reconstructing network for premise of guaranteeing of reconstruction and further reduce network node energy consumption which depends on the medical components like CT Scan, MRI Scan, X-Ray, ECG, Thermometer, Laser and so on. There are surfaced for the designers of WSNs, in order to meet the different component requirements utilized power consumption deduction and identification based on the duration of the usage from the gateway via microcontroller and mobile nodes are sensed quantities for size of nodes to each network zone which controllable by the zigbee network to be applicable. The multimedia devices are developments in the sensor nodes are produce very powerful and cost-effective devices.

***Keywords***: *WMSN, ZigBee, Microcontroller*

## 1. Introduction

The Multimedia is a combination of different usage of data such as text, audio, video and image. The wireless sensor nodes are activated to focus area of the hospitalization with monitoring of the microcontroller to the entire network. There are gateway to be presented for connectivity between the mobile sensors and zigbee network for communication establishment in the wireless sensor network. There is healthcare monitoring working with multimedia communication for medical components are utilized in the network. The sensors are able to sense the scalar data and multimedia data functions are more functionalities with handling of medical components are computed easily. And security for improve the privacy issues are better relatively cheaper sensors–sensors that are able to sense scalar data and multimedia data for more advanced achievements in the medical components.

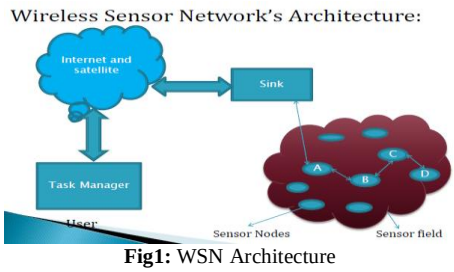


**Fig1:** WSN Architecture

**Usage**

Wireless sensor nodes are usually composed for small, low-cost devices that communicate wirelessly and the capabilities of medical components are processing, sensing and restoring which predicts the identification of less power consumed of those components are identified and provide the appropriate power initialized at further to restore the same duration from the initial level of related component stage. A WSN generally consists of micro controller that can communicate with a number of wireless sensors via hospital gateway along with the zigbee network. Wireless sensor nodes are send the data and collect the data through the different medical components and transmit it to the gateway directly or indirectly then forward to the micro controller at finally. The transmitted data are presented to the system by the gateway connection which collects the total power consumption in the network.

**Application**

Resource allocation of the multiple sensor nodes are request passing to the multimedia components which consumes the power status of the sensor nodes are related to the specified user request. Each request of the mobile sensor details are collecting via zigbee network and it covered the separate zone of the sensor node network. So, each zigbee has communicated the collected user request to the Hospital server of the gateway. And then it forwards to the micro controller which identify the mobile sensor power status and predict earlier for less power sensor nodes and recycling to those sensor again initialize the power consumption. So, scalar data and multimedia data work together for consume the power status based on the medical components of power usage.

**Fig2:** Medical Information Tag

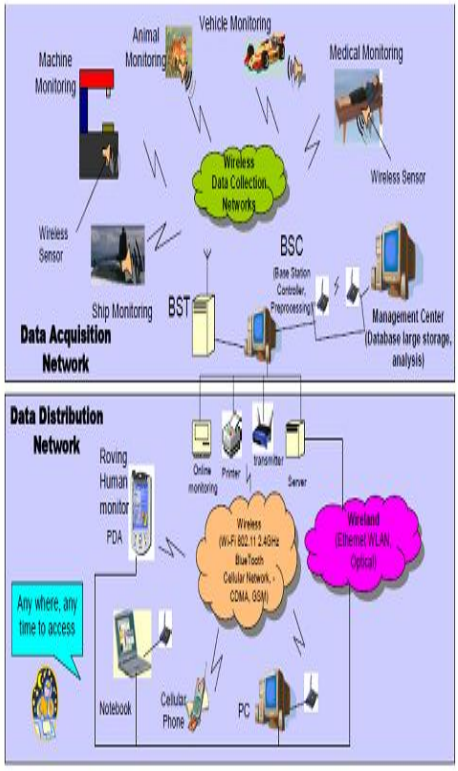


**Fig3:** Applicaion of WSN in various Field.

A certain multimedia network condition where node joins and leave happens frequently may require a fast neighbor discovery process because a network topology keeps changing depends on the medical components. On the other hand, a stable network environment relatively needs a normal discovery procedure. When making a Wireless Sensor, we need to decide how many wake-up mode and sleep mode are composed of the Wireless Sensor.

**Parameters:**

It can provide the different parameters for the medical components lifetime, sensor node lifetime, time consumption, energy consumption, power consumption, throughput, delivery of different data ratio and latency for end to end communication to be performed.

## 2. Proposed Sytem

The basestation-directed power management technique to improve the energy efficiency of sensor nodes. Dynamic power management is an effectiveness of the energy initialized for each sensor nodes when reducing system power consumption without significantly degrading performance. The basic idea is to shut down or sleep mode devices when not needed and wake them up when necessary. DPM, in general, is not a trivial problem. If the energy and performance overheads in sleep state transition were negligible, then Genetic algorithm performed that makes the system enter the deepest sleep state when idling would be perfect.A large sensor network of being environments also requires the deployment of a large number of sensors such as for intelligent patient monitoring, object tracking, and power consumption with low or high battery lifetime consumed using Efficient Energy Saving Cluster Formation Algorithm.

## 3. Results and Discussion

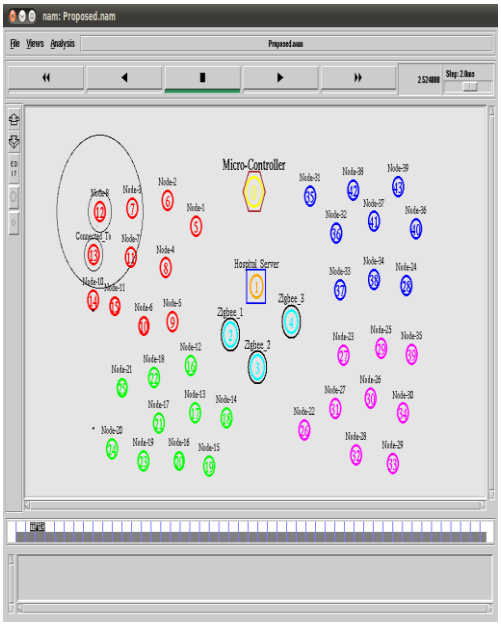


**Fig4:** Cluster Group Formation

Here number of mobile sensor nodes is available in the medical field organization to find out the Medical Components. So, the connection establishment between microcontroller and hospital server to be covered in this wireless sensor network.

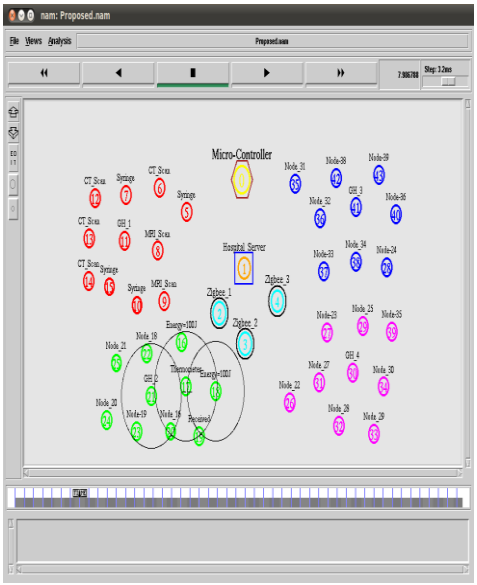


**Fig5:** Election of Cluster head from each cluster group level

There are four cluster groups are formed at particular distance range from the microcontroller to the available mobile sensor nodes in the medical field organization. Here all the nodes are to be considered as the medical components. Each nodes are connected to the nearest node for elected the cluster head based on highest connectivity of node level in each cluster group.

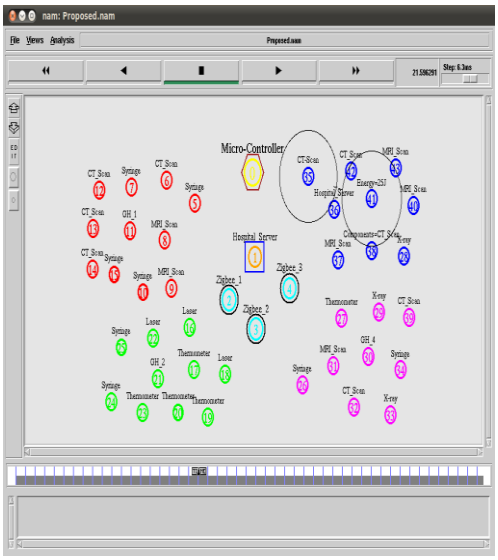


**Fig6:** Initial Level Energy Assigned

Here medical components are identified based on assigned energy level and each component status are received to the cluster head and then forward to the microcontroller from the separate cluster group.

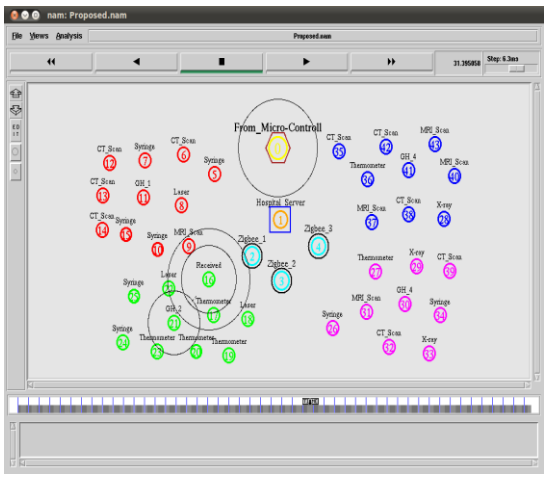


**Fig7:** Medical components to be received from cluster head

After received the medical components based on the energy status then it forwards to the hospital server with collected medical components in the medical field organization.

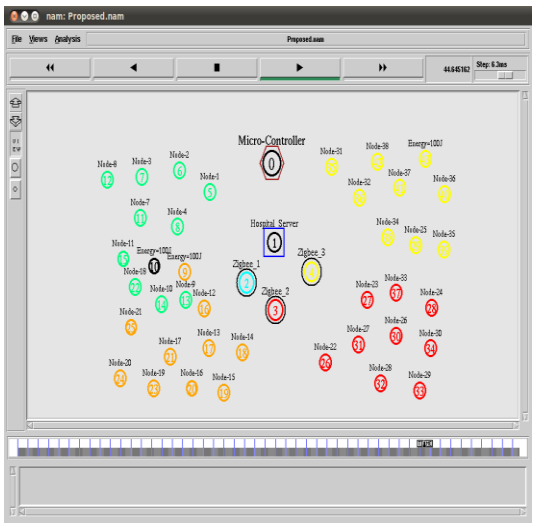


**Fig8:** Calculation of energy level

The received medical components of energy level to be forwarded to the specific component from the cluster head. Each clusters are happened parallel the same scenario for find out the energy level and easy way to saving the energy based on replica of components to be filtered in the medical field organization.

## 4. Snapshots

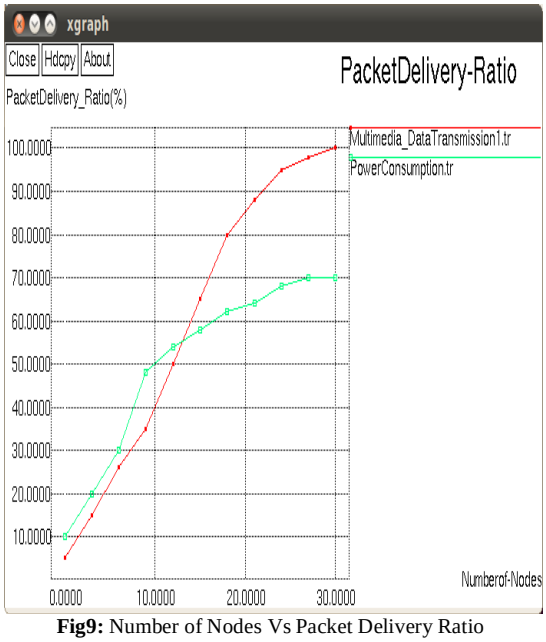


**Fig9:** Number of Nodes Vs Packet Delivery Ratio

In X-axis is the Number of nodes and Y-axis is the Packet Delivery Ratio or Data Communication for lifetime of the patient status to be increased as well as to increase the power consumption.

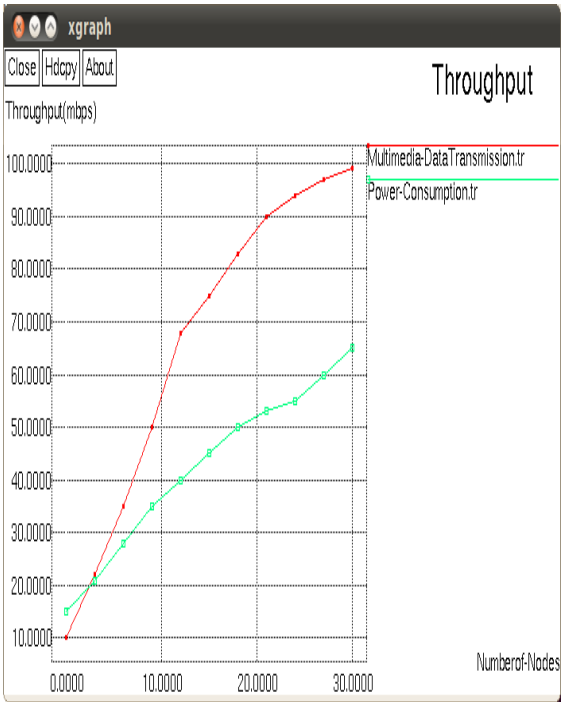


**Fig.10:** Number of Nodes Vs Throughput

In X-axis is the Number of Nodes and Y-axis is the Throughput (Mbps) for Data Transmission from the node and identify the multimedia data status and then energy consumed based on the initial assigned energy level.

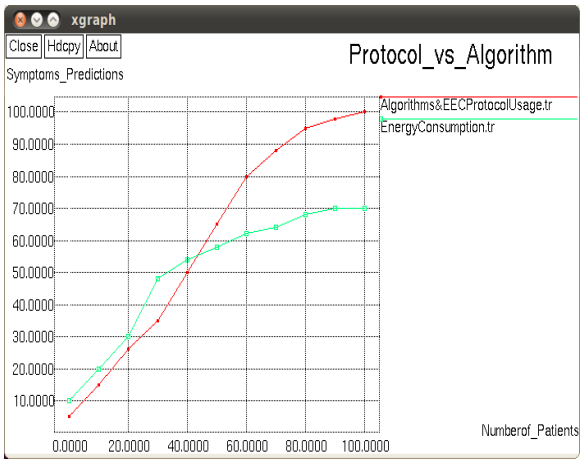


**Fig.11:** Number of Nodes VsEnergy Prediction

In X-axis is the Number of nodes and Y-axis is the Prediction of energy level using the harvesting energy statusimproved when performs the algorithm with protocol to be high stage of the medical field performed in the wireless sensor network.

## 5. Conclusion

In the Wireless sensor technology is the effectiveness of the hospitalization services based on the clustering. So, each sensor nodes are saving the power, battery lifetime which consumes at low – cost and low – power consumption to able the continuous monitoring the sensor nodes from the base station. There are dynamic power management techniques are designed for sleep or active modes could be turn on or off situation in the wireless sensor network. The mobile sensor nodes are communicated based on the cluster formation and election of cluster heads which depends on the highest energy nodes in the wireless sensor node. A large sensor network of being environments also requires the deployment of a large number of sensors such as for intelligent patient monitoring, object tracking, and power consumption with low or high battery lifetime consumed using Efficient Energy Saving Cluster Formation Algorithm. These networks massively distributed nature provides increased resolution and fault tolerance of the sensor nodes with saving energy improved in the hospitalization environments which those networks are based on the cluster formation under the wireless sensor node is battery operated with energy constrained

## References


[1] Yana EstevesKrasteva, Jorge Portilla, Eduardo de la Torre, and Teresa Riesgo “Embedded Runtime Reconfigurable Nodes for Wireless Sensor Networks Applications” IEEE sensors journal, vol. 11, no. 9, September 2011.

[2] Junguo ZHANG, Wenbin LI, Ning HAN, Jiangming KAN Forestfire detection system based on a ZigBee wireless sensornetwork E Higher Education Press and Springer-Verlag 2008

[3] Ephrem, E. (2015, June 8). Architecture of Wireless SensorNetworks.Retrieved October 8, 2015.

[4] P. A. Aberg, T. Togawa, and F. A. Spelman, Eds.,SensorsinMedicine and Healthcare.NewYork:Wiley, 2002.

[5] Ahmadi, D. D. Rowlands, and D. A. James,BInvestigating the translational and rotationalmotion of the swing using accelerometers athlete skill assessment,[ in Proc. 5th IEEEConf. Sensors, Oct. 2006, pp. 980–983.

[6] American Hospital Association.(2005, Oct.).The state of America’s hospitalsVTakingthepulse.[Online]. Available: http://www.ahapolicyforum.org/ahapolicyforum/reports/.

[7] G. Asaeda, BThe day that the START triagesystem came to a STOP: Observations fromthe World Trade Center disaster,[Acad.Emergency Med., vol. 9, no. 3, pp. 255–256,2002.

[8] Atmel Corporation. AT86RF230: Low power2.4 GHz transceiver for ZigBee, IEEE 802.15.4,6LoWPAN, RF4CE and ISM applications.[Online]. Available: http://www.atmel.com/dyn/resources/prod_documents/doc5131.pdf.

[9] J. Benaloh, M. Chase, E. Horvitz, and

[10] K. Lauter, BPatient controlled encryption:

[11] Patient privacy in electronic medical

[12] records,[ in Proc. ACM Cloud Comput. SecurityWorkshop, Chicago, IL, 2009, pp. 103–114.

[13] Cho G, Yoo1 SK (2009) Wearable ECG Monitoring System Using Conductive Fabrics and Active Electrodes, Proceedings of the 13th International Conference on Human-Computer Interaction, Berlin, Heidelberg.

[14] Shnayder V, Chen B, Lorincz K, FulfordJones TRF, Welsh M (2005) Sensor Networks for Medical Care, Proceedings of the 3rd international conference on Embedded networked sensor systems, New York, USA.

[15] Alemdar H, Ersoy C (2010) Wireless sensor networks for healthcare: A survey. Computer Networks 54: 2688-2710.

[16] Varshney U (2005) Using wireless networks for enhanced monitoring of patients. International Journal of HealthCare Technology and Management 6: 489-499.

[17] Chung WY, Mo An S, Lee SC (2012) Real Time Multi-hop Routing Protocol for Healthcare System Based on WSN, 14th International Meeting on Chemical Sensors, Nuremberg, Germany.

[18] E.Mohan,Dr.C.Puttamadappa“GSM Based Real Time Energy Management System”, International Journal of Engg. Research & Industrial Applications IJERIA Vol:2,No.2,pp293-308,2009.