Implementation of Modified Huffman Coding in Wireless Sensor Networks

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Abstract

WSNs are composed of many autonomous devices using sensors that are capable of interacting, processing information, and communicating wirelessly with their neighbors. Though there are many constraints in design of WSNs, the main limitation is the energy consumption. For most applications, the WSN is inaccessible or it is unfeasible to replace the batteries of the sensor nodes makes the network power inefficient. Because of this, the lifetime of the network which has maximum operational time is also reduces. To make the network power efficient, different power saving/reduction algorithms are proposed by different authors. Some of the authors have achieved the low power consumption by modifying like encryption & decryption algorithms, Routing algorithms, Energy Efficient Algorithms, Compression and decompression algorithms, minimizing control packets, and many other different power reduction algorithms. Among many algorithms, we have chosen data compression techniques aiming different targets like memory, power & bandwidth reduction. To achieve our objectives, we have worked on Huffman coding - compression algorithm and updated the algorithm by including one’s
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complement, XOR operations and finally named as Modified Huffman Coding. The performance of the proposed model is analyzed and it is observed that, information is maximum compressed which consumes less computational power, thereby increasing the battery life.

References

7. Lecture 19, "Compression and Huffman Coding", Supplemental reading in CLRS: Section 16.3.

Index Terms

Computer Science

Wireless

Keywords

WSN, Power Consumption, Security, Huffman Compression, Decompression.