RESEARCH ARTICLE

A FUZZY BASED APPROACH ON GROUP MOBILITY ORIENTED WPAN

[1]Priyanka Narwal, [2]Bhawna Kochhar
[1]M.Tech Scholar, CE, PDMCE, Bahadurgarh
[2]Assistant Professor, CSE, PDMCE, Bahadurgarh

ABSTRACT: To optimize the communication in WPAN network one of the significant approach is to perform the group mobility. In this work, fuzzy rule based group mobility architecture is presented. The work includes the formation of group and to perform the communication in this integrated environment. The work also provided the group shift mechanism based on the fuzzy vectors. In this paper, an exploration to WPAN network and fuzzy model is described.
Keywords: Fuzzy, WPAN, Group, Mobility

1. INTRODUCTION

1.1 WPAN

Wireless personal area is composition of mobile network under sensor constraints. The network is restricted in terms of area and energy specifications. The nodes in this network area are smart nodes. These kind of nodes are having the integrated memory and the processing capability. It is simple and low cost communication network that communicate with different devices and applications with limited power requirement. WPAN is very relaxed about the throughput requirements. These are those wireless networks with a coverage area of around 300 to 10 meters for WPANs. Ranging from high end applications to low end short range services, these networks can be employed in home, enterprises, industrial and medical environments etc. WPAN network is having its significance in home, industrial and transportation constraints. The smart sensor network is an intelligent network defined under the internal processing with capabilities of communication capabilities in the restricted area. This network form is having the various associated challenges in terms of sensing range etc. In this chapter, the network architecture, constraints and the relative parameters are described in detail. PAN is one of the most effective limited area networks. The main properties of this network are the mobility of nodes along with decentralized system. It means, the mobile nodes can move over the network perform the communication by using the intermediate nodes.

The main concern of mobile network is the security. The security is more challenging in these networks because of the dynamic nature of nodes. It means, any node can enter to the system. These kinds of network are very critical under different kind of active and passive attacks. As the network does not have any centralized security mechanism, the criticality of network increases. These kind of network suffers from different kind of attacks because of open communication medium, open access network and the cooperative communication over the network. Because of these characteristics, the network suffers from different kind of attacks such as black hole, worm hole, DOS attacks etc. These kind of attacks, makes the network unreliable and there is the requirement of some security mechanism to improve the communication integrity. The

challenges also include limited resources and the changing topology so that the network management is not effective. This kind of network requires the some authorization or the secure routing mechanism to provide the reliable packet delivery over the network [1].

2. ZIG BEE

Zig Bee technology is a low data rate, low power consumption, low-cost, wireless networking protocol targeted towards automation and remote control applications. The ZigBee comes from the domestic honeybee which uses a zig-zag type of dance to communicate important information to other hive members. This communication dance is also known as ZigBee Principle, which we are trying to emulate with this protocol a bunch of separate and simple organisms that join together to tackle complex tasks. IEEE 802.15.4 committee started working on a low data rate standard a short while later. Then the Zig Bee Alliance and the IEEE decided to join forces and Zig Bee is the commercial name for this technology. Zig Bee is expected to provide low cost and low power connectivity for equipment that needs battery life as long as several months to several years but does not require data transfer rates as high as those enabled by Bluetooth. In addition, Zig Bee can be implemented in mesh networks larger 2 than is possible with Bluetooth. Zig Bee compliant wireless devices are expected to transmit 10-75 meters, depending on the RF environment and the power output consumption required for a given application, and will operate in the unlicensed RF world-wide (2.4GHz global, 915MHz Americas or 868 MHz Europe). The data rate is 250kbps at 2.4GHz, 40kbps at 915M.It is the only standards-based technology that addresses the unique needs of most remote monitoring and control sensory network applications.

3. PROPOSED WORK

Wireless PAN is one of the most intelligent network defined with the specification of mobile sensor with smart capabilities. These capabilities includes the processing and the memory strength defined in each network node. Each node is here defined under energy limitation as well as coverage range specification. The network is here defined under mobility feature so that the effective network management will be done. In this specialized network, number of sub networks are defined where each sub network is represented as the group node. Each group here performed the simultaneous mobility over the group node along with the specification of group coordinator. The main challenge in such network is the different speed of group nodes as well as the movement in different directions. Because of this, it is required to manage the group nodes effectively as well as to analyze and manage the situation of handoff. In this present work, a fuzzy effective multi parametric approach is defined to manage the group mobility in personal area network. The work is here defined in multiple stages. In first stage, the work is about to generate the groups as well as select the group leader for effective communication. In second stage, the work is about to perform the inter group and intra group communication so that the packet loss and communication delay will be reduced. In third stage of work, the handoff mechanism will be managed over the communication. The presented work will be implemented in mat lab environment.

4. CONCLUSION

This presented work is defined to optimize the group management and group based communication in integrated WPAN network. The work is about to provide the group formation and group shift based on fuzzy vectors.

5. FUTURE WORK

In this present work, fuzzy based work model is presented for group formation. In future some other rule generation model can be applied. The work can be defined under some optimization algorithm in future

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