Design Of High Speed Data Transmission Systems Using Cooperative Diversity Wireless Networks.

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Abstract: *Cooperative Diversity (CD) is a method in which different radio terminals deliver to each other for developing the total network channel capacity. We propose a high speed data transmission using efficient queuing system in wireless diversity networks. It provides the simultaneous data transmission of data for multiple users and increases the amount of data packets. To develop the robustness in ad hoc networks, the CD-MAC algorithm is introduced in the physical layer. The MIMO technique sends and receives the same data signal simultaneously on a single radio channel. OFDM is a frequency-division multiplexing scheme used to reduce the interference. The ALOHA in cooperative diversity has the drawback of low throughput under heavy load conditions and collision. It sends the messages any time they want. Introduction of Slotted ALOHA Buffer CD it is expected to add some more advantages reduce the delay and transmits data packets simultaneously for achieving the high channel utilization with less interference. Queuing is used to increase the coverage optimization. The Wireless Channel's broadband characteristics improve the ALOHA network protocol performance.*
Keywords: *Cooperative diversity, Channel capacity, Throughput, Outage probability.*

I. Introduction

To develop the robustness in ad hoc networks, the CD-MAC algorithm is introduced in the physical layer. Distributed space-time/frequency coding scheme is introduced for improving the SNR. The end to end BER is decreased by considering two power allocation strategies between sources to relay. To develop the robustness in ad hoc networks, the CD-MAC algorithm is introduced in the physical layer. The efficiency and credibility of the cognitive system will be improved by introducing the spectrum, which will have the distinction of finding wrong and missed issues. Slotted ALOHA with buffer for delivering the data packets from one place to another place as well as retransmits the degraded packets from the transmission. The coalescence of Slotted ALOHA (S-ALOHA) and buffer is implemented for delivering data packets from one place to another. The combination of Slotted ALOHA (S-ALOHA) and buffer is implemented for delivering data packets from one place to another. This protocol is expected to improve the throughput, minimize the outage probability and delay for effective transmission from source to destinations. It provides the simultaneous data transmission of data for multiple users. The end-to-end SER probability is enhanced, when the Switched Selection Combining employed with the MPSK. To achieve the best SNR, the combination of the weighing vector and MRC technique is employed. Symbol Error Probability (SEP) is computed and then the diversity order is carried out for developing the confidential capacity of the network. A multiplier and forward two way multi-relay system is used for achieving the SNR and its Probability Density Function (PDF) for each transmission node. Performance and reliability of the cognitive system are improved by introducing the spectrum sensing a problem with diversity in detecting the false and missed probabilities. In MIMO, the co-operative communication is applied for enhancing the coverage and system capacity of wireless environments and its performance depends on a number of intermediate nodes. It is applicable only when the channel estimation error exists. The GBN-ARQ protocols are analyzed by the queuing model and it estimates queue length as well as delay statistics. GBN-ARQ is an error recovery protocol. Data after the delay range is useless. The existing algorithms have some constraints such as high delay and low throughput. In order to overcome these problems, the Slotted ALOHA Buffer CD (S-ALOHA-BCD) method is introduced. The S-ALOHA-BCD method used to improve the

throughput as well as it minimizes the outage probability and delay for creating the effective transmission from the source to the destination.

Related Work

Ram Prasad Narayanan et al (2016) Wireless Sensor Networks, Performance and Massive Wireless Sensor Networks (WSNs) were used to perceive some parameters in an environment, handling data transmitted and communicating / communicating / transmitting information to the network. It is possible to use the new product design to study possible RF modules. The RF modules were particularly focused on RF-related parameters such as power consumption and TX power and RX sensitivity.

Madhvi Soni et al. (2015) reviewed the Data Communication in Wireless Fading Channel. Variety of transformations between devices and equipment (RCID) is an important technique used to improve the efficiency of wireless digital communications in hidden environments. Various types of indirect models and computer performance improvements have been revised using RCID techniques. The rapidly increasing use of over-data rate transmission over hidden channels. The RCID technique has helped improve the efficiency of wireless communications systems.

Nurapallah's Arshad and others. (2016) Wireless Communication System Workshop on Orthoponal Breakdown Division Multiplexing (OFDM) performance. The output showed that the performance of OFDM signal in terms Rate (BER) under different of Bit Error channel model. OFDM techniques have improved the quality of the transmitted data and technique was also resilient to multipath distortion. It also verified that despite the improvement in BER by applying OFDM technique, the PAPR also increases.

Peijian Ju et al. (2014) worked on Performance Analysis and Enhancement for a Cooperation Wireless Diversity Network. They analyzed the upper boundaries of the combined signal-to-noise ratio (SNR) and the unconditional succession probability with many aid collaborations. The numerical and simulation results evaluate the accuracy of analysis and proved intelligent observations. In some places, some assistants and their places are not predetermined or chosen. When the computer has a sufficient area, it was found that the probability of success was the success of the number of winners.

II. System Model

COOPERATIVE DIVERSITY NETWORKS

Cooperative Diversity Networks is a multiple antenna technique for improving or maximising total network channels by decoding the combined signal of the relayed signal and the direct signal in wireless multi hop networks. Cooperative diversity replaces the information from a combination of two signals. There is another definition of user cooperation cooperative diversity. User cooperation considers an additional fact that each user relays the other user's signal while cooperative diversity can be also achieved by multi-hop relay networking systems.

MAC has media access control. A MAC tier protocol is a protocol for controlling physical transfer media access on a LAN.

SLOTTED ALOHA PROTOCOL

The S-ALOHA protocol is one type of ALOHA protocol that is used to deliver the data packets from one network channel to another network channel. The data packets are divided and these data packets are stored in the data buffer. In S-ALOHA protocol, the time is split into the discrete intervals called slots and each interval is correlated to one frame. The length of the time slots becomes greater than the packet duration. If more than one transmission happens in one-time slot, it creates collision during the transmission. Collisions are avoided by observing the other stations performance. With Slotted Aloha, the impact gap is reduced to T: a packet transmitter successfully completed if the same slot does not have a pocket-generating terminal.

$P_s = e^{-AT}$

$S = G e^{-G}$

S has a maximum for G = 1 and its value is

$S_{max} = 1/e = 0.36$

The mean delay needed for the successful transmission of a packet to be calculated in the same.

The expression of Ps has changed: $P_s = e^{-G}$.

BUFFER

The data buffer is used as a temporary storage which is created in the RAM memory and the ACK buffer used to transmit the ACK signal to the transmitter for retransmitting the data packets which are degraded from the transmission. The information stored in the buffer becomes a few megabytes. The buffer size is an important factor for analyzing the queuing delay of the desired network. A Smaller value of packet length is

essential for transmission because the larger value of packet length requires higher buffer size. If the buffer size becomes high, it increases a delay and it decreases the channel utilization as well as it minimizes the throughput.

S-ALOHA-BCDMETHODOLOGY

In this paper, the combination of Slotted ALOHA (S-ALOHA) and buffer is implemented for improving the CD. Queuing is used to increase the coverage optimization. In queuing, the buffer is introduced for recovering the error files, which is degraded in the transmission. Channel capacity of the total network is improved by using the CD and the queuing delay is determined for knowing coverage optimization of queue model. The police station confirms whether another station is being abducted. Otherwise, the first bit of information is sent. If no conflict is detected, sends other bits information while continuously testing whether a continuous conflict is detected. If a conflict is detected, it will reboot the random amount of time to start the operation. The following figure shows the block map of the S-ALOHA-BCD system.
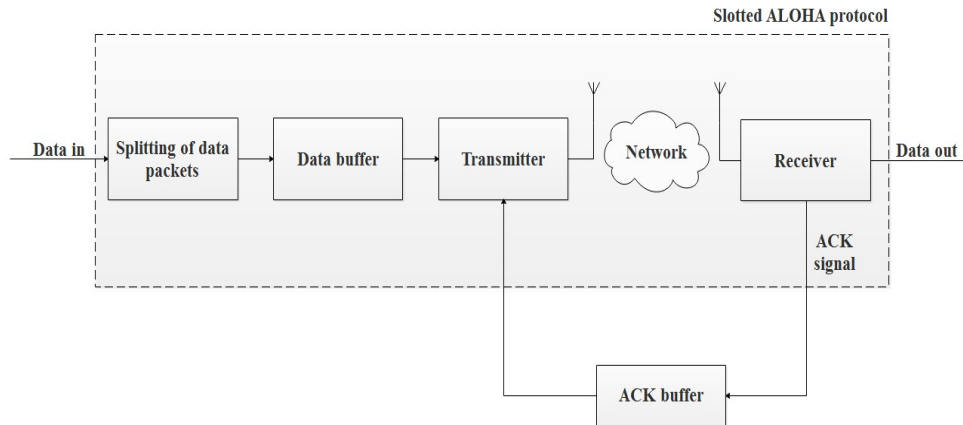
Fig. 1. Block diagram for S-ALOHA-BCD method

Throughput has to be high as well as the smaller value of delay and outage probability is required for an effective data transmission. Outage probability is minimized and the amount of data packets is increased based on maximizing the throughput of the network. The buffer size minimum to make the delay value small and it maximizes the throughput. This delay is used to analyze the queue model based on the retransmission of degraded packets in the transmission and the channel capacities are improved by high throughput and less outage probability of co-operative communication networks.

III. Performance Analysis

The average rate of delivering a successful message on a telecommunications channel. Increasing the network with the proposed method can be compared to the existing system.
Let the state of the system be the number of backlogged nodes. Let $T(n)$ = average amount of time between state transitions when the system is in state n
$$T(n) = \beta + (1 - e^{-\lambda\beta} (1-q_r)^n)$$
When q_r is small
$$(1-q_r)^n \sim e^{-q_r n} => T(n) = \beta + (1 - e^{-\lambda\beta - nq_r})$$

Outage probability is minimized and the amount of data packets is increased based on maximizing the throughput of the network. The buffer size minimum to make the delay value small and it maximizes the throughput. This delay is used to analyze the queue model based on the retransmission of degraded packets in the transmission and the channel capacity is improved by high throughput and less outage probability of co-operative communication networks.

IV. Conclusion

Throughput has to be high as well as the smaller value of delay and outage probability is required for an effective data transmission. The data packets are increased based on maximizing the throughput of the network. The channel capacity is improved by high throughput and less outage probability of co-operative communication networks. Simulation results have been provided to verify the derived analytical results, which also show that our proposed scheme outperforms effective transmission high speed data transmission using efficient queuing system in wireless diversity networks.

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