Development and Application of Cooperative Diversity Technology in Video Communication in Multimedia Environment

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Abstract: In the multimedia environment, the development and application of cooperative diversity technology in video communications is more extensive. The Multiple terminals that is with a single antenna can share each other's antennas to build a virtual multi-antenna system. At the same time, the transmission volume of the system will increase significantly. The transmit power is reduced, and the system bit error rate is also significantly reduced. On this basis, I hope that the research in this paper can provide some reference for the development and application of collaborative diversity technology in video communication, and this technology has attracted more attention.

1. Introduction

Now is the era of informationization. The public's awareness of wireless transmission has increased significantly. It is hoped that the propagation speed will increase significantly, channel capacity will be widened, communication quality will be greatly improved, and multipath fading characteristics are the most important influencing factors. For diversity technology, it can transmit a large number of signal samples at the transmitting end, and the fading situation of the wireless channel is changed. Time diversity and space diversity are important diversity methods, and the channel capacity is greatly expanded.

2. Cooperative Diversity Technology

When affected by factors such as the quality and volume of the mobile terminal, many antennas will be on the base station, and the system performance cannot reach the expected goal. Cooperative diversity technology has an important role. A single antenna can perform spatial diversity. Each terminal has a cooperative partner. When the terminal sends information to the base station, the information to be sent is sent to the cooperative partner, and then the message is sent to the base station uniformly. Spatial diversity gain is increased. If it is in a declining environment, after the use of cooperative diversity technology, the system capacity will increase significantly, the service quality will be improved, the system performance will be more optimized, the antenna will be shared between partners, the system will have virtual characteristics, and video communication will usher in a new development Phase [1]. The form of cooperative diversity has various characteristics. When the source node sends a signal by broadcasting, the destination node and the relay node receive the signal, and the relay node also processes the various signals received. After the destination node receives the signal, the source node also plays its role. It can send repeated or brand new information to the destination node. Finally, the destination node combines the signals received in the two steps according to the inherent rules.

Cooperative diversity technology has an important role. When a partner's antenna is used, it will be associated with its own antenna to form a multi-transmitting antenna. After combining the traditional antenna diversity system, the spatial hierarchical gain is changed. If there is no information to be transmitted in a period of time, or when no collaboration is performed, the resources can only be idle. Collaborative diversity can make full use of various resources. In

addition, when the user resources are not idle, not only the own information To communicate, but also to convey the information of partners, one's own resources may be sacrificed partly [2]. At the same time, the airspace resources of partners can be used. When the program design is scientific and normative, it will achieve huge gains, far exceeding the price to be paid. In the end, various resources in the network are fully used. The performance becomes very stable.

3. Collaborative Diversity Protocols in a Multimedia Environment

3.1. Enlarge the Prequel

Collaborative diversity has a trend of diversification. The performance and complexity of each method are significantly different. Repeated collaboration and coding collaboration are among them. In the process of amplifying the preamble, after receiving noisy information, if the time interval is specified, the analog signal will be simply put into the buffer, and then placed in the collaboration time, the signal will be continuously amplified, Transmission to the base station system. For the base station, it combines the signal sent by the user with the amplified signal sent by the companion, and the information is sent. Although the signal is amplified when the signal is amplified, the base station can still perform well when receiving different signals For identification.

3.2. Decode the Prequel

The cooperative node receives and detects the bit information in the partner, and judges the bit information. This cooperation method is relatively simple. However, when the channel quality is poor, the user may incorrectly judge the information transmitted by the partner. The effect of full diversity cannot be affected Reached. In order to reduce the frequency of error propagation, the cooperative node should refer to the instantaneous signal ratio of the channel between it and the source node to determine whether to participate in this collaboration.

3.3. Cooperative Diversity

Coding diversity diversity combines the cooperation technology with the channel coding technology well. After using the differentiated fading path, different parts of each user's codeword are sent to correctly encode the received information. Subsequently, repeated transmission with reference to the encoding method will improve system performance. At the same time, multiple transmissions are performed in each space. In the process of repeated encoding for each mobile terminal, diversity and encoding will be closely linked, and system performance will be significantly improved. 3]. In the process of running the system, it will refer to the prior coding, without relying on the cooperative terminal for information feedback. When the relay interrupts the decoding process, it can automatically switch to the non-cooperative mode, and the system efficiency will be greatly enhanced. For collaborative coding, when it is in a slow fading environment, it will produce stronger performance. When the user's transmission rate and transmission power do not change, and the quality of the user channel is poor, the user's error performance will still be improve.

If both users can successfully decode, the system will obtain a good hierarchical gain. When it is in a fast fading channel, it will sacrifice the user performance of the relatively good uplink channel quality to improve this situation. Concept, the cooperation scheme becomes more excellent. When it is in the situation of fast fading channels, it can still obtain excellent classification gain without making other sacrifices. As a result, the performance is very excellent. The receiving end does not have to ask for the characteristics of channel information between users. With reference to the results of channel coding, coding diversity has received widespread attention. The system should use good algorithms, and the information transmission speed will increase. Diversity is an important means of communication. Even if the system performance is improving, there are still limitations in the specific application process and innovation is needed.

4. The Problems of Collaborative Diversity Technology in Video Communication in the Multimedia Environment

Cooperative diversity technology has many advantages, but in the specific practice process, many problems will still be exposed. The system presents complex features. The mobile station should detect uplink signals well, and the complexity of the receiver will rise. According to the established scheme In terms of complexity, a reasonable trade-off between complexity and performance gains is needed, and when greater gains are achieved, the collaboration scheme is more desirable. At the same time, information security should not be ignored. All kinds of information should be fully kept secret, and the data should be encrypted before transmission. The mobile station can detect the data of the peer well. However, if the information transmitted by the peer is not understood, the complexity of the system will increase. Although it may be encrypted in a specific form in the future, today there is a lack of efficient technologies to ensure the security of information transmission [4]. In addition, the routing problem should be highly valued by people. Mobile stations should scientifically select cooperative partners to ensure that the number is reasonably determined. When the location of the mobile terminal changes, scientifically select new cooperative partners and refer to which routing protocol to carry out. The choice should be a question deeply explored by people.

In the future, people's research efforts should be continuously increased. When in a multi-user environment, the cooperation partners of each terminal are reasonably divided, and when the relative position is changed, re-division is performed. In essence, cooperative diversity is based on the use of partner antennas, and forms multiple transmitting antennas with its own antenna. The spatial diversity gain will be significantly improved. This situation should be highly valued by people [5]. In the context of the information era, people should understand the development situation of the era, improve various technologies, cooperative diversity is a new type of airspace diversity, transmission diversity can be obtained, the system capacity will be significantly improved, and the information rate is also large Amplified. When in a multi-user environment, each single-antenna mobile terminal obtains its own partner. When sending its own information, it can also assist other terminals to send information, and the antennas are fully shared. In this way, the speed of information transmission will increase, and the system performance will also change.

5. Conclusion

The collaborative diversity technology is widely used in video communications in a multimedia environment, and when compared with conventional cellular systems, it is found that the performance of collaborative diversity systems has significantly improved, system capacity has increased significantly, data transmission speed has accelerated, and service quality rise. In the end, when using cooperative diversity technology, the problem of placing multiple antennas was well resolved, and significant changes took place in the field of wireless communications.

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