Chapter 4

Conclusion

IEEE 802.11 is the most prevalent standard in the wireless technology. It contains two medium access schemes. One is a centralized scheme called *Point Coordinator Function (PCF)*. In PCF, only when polled by the PC can a station transmit packets. While the other one is a distributed method called *Distributed Coordinator Function (DCF)*. All stations have to contend for the medium independently in DCF.

Due to the instability of radio link, wireless stations experience severe variations in service. In order to overcome various impairment of wireless channel, some types of diversity have been investigated. This thesis aims to combine the concept of spatial diversity into the polling-based system PCF (focus on uplink) to improve the performance, whereby diversity gains are achieved via the cooperation of stations. A static partner choosing algorithm and a dynamic partner choosing algorithm are proposed. In the proposed mechanism, PC exploits the locations of all stations and assigns partners to stations in bad channel condition. Stations send copies of data frames to partners so that their partners can help finish data transmission when being polled.

According to the simulation results, PCF applies the proposed algorithms, named *Static and Dynamic Cooperative PCF* outperforms the original PCF. The original PCF confront serious performance deterioration under poor channel. However, the *Static and Dynamic*

Cooperative PCF decreases station sensitivity to channel variations which leads to higher throughput, lower delay, and lower packet loss ratio. Furthermore, the simulations show the proposed mechanism can distribute the loading of help traffic.