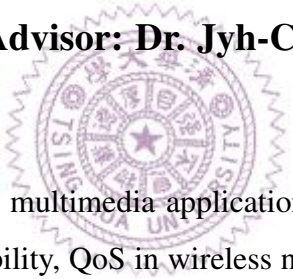


Abstract

A Partner Choosing Algorithm in Polling-based Cooperative Network

Ying-Shin Chen

Advisor: Dr. Jyh-Cheng Chen



Quality of service (QoS) in multimedia applications has become an important issue. Due to the lack of radio link stability, QoS in wireless networks is more challenging than that in wired networks. This thesis provides an enhancement for the most widely deployed wireless LAN technology, IEEE 802.11. Because of the suffering from severe variation in channel condition, some forms of diversity have been proposed to combat the effects of fading. Spatial diversity is one of the well-known forms of diversity. In this thesis, a solution to improve the performance of the polling-based Point Coordination Function (PCF) in 802.11 via user spatial cooperation diversity is proposed. Wireless stations are assigned partners so that they can overcome the fluctuant channel conditions. The proposed method not only increases users' throughput, but also balance the load of help among all wireless stations. The use of spatial diversity has critical influence on the performance of PCF. The simulation results show that the proposed method outperforms the original polling-based system no matter in throughput, delay, or packet loss ratio. The solutions proposed in this thesis

are fully complied with IEEE 802.11. By extensive simulation, it has been shown that the proposed solutions are both efficient and practical.



中文摘要

近年來，隨著無線網路的廣泛使用，各種應用程式日新月異，對無線網路的需求更是與日遽增。但相對於有線網路，由於無線訊號的不穩定性，在無線網路中提供穩定的服務是很重要的議題。以最被廣泛使用的無線區域網路技術 IEEE802.11 為基礎，此篇論文針對無線訊號的不穩定性提出可增進效能的方法。

目前已有一些不同形式的多元性的使用來對抗無線網路訊號無法預測的波動。其中，空間上的多元性是最多人使用的。此論文主要利用空間多元性的優點提出新的增進 802.11 集中式網路效能的方法。網路協調者利用位置資訊來分配幫手給各使用者，如此一來即使遭遇訊號不良的情形也可以經由幫手完成資料的傳遞，所提出的方法不僅提高資料的傳送量，並可平均分配幫忙其他使用者的工作量到所有使用者。模擬的結果亦支持所提出的方法可以達到更高的效能。