適用於無線通訊系統的適應性 TCP 通訊協定

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摘　　要

在 3G 甚至是後 3G 的時代，無線通訊將不單單只是來傳送語音方面的服務。其他各類的資料傳輸，像是網頁瀏覽、圖片和文件資料的傳送、甚至是影音方面的檔案，也將是未來無線傳輸應用的主流之一。在傳統網路，這些資訊傳輸都是使用所謂的“傳輸控制協定”（TCP），而這協定，應用於有線網路傳輸的特性是較爲合適的。因此，TCP 通訊協定使用的演算法，也是基於這些特性爲假設前提下設計出來的，像是，在傳統的有線網路進行資料傳輸，資料不容易在傳輸的過程之中的毀損或是遺失而造成傳輸中斷。還有，在傳輸的過程中，傳輸速率是穩定的，不易有大幅度的變動。但是，以上的特性，在無線網路的變動傳輸通道（Fading channel）之下，就不一定成立了。像是，傳輸速率會因爲系統資源、傳輸通道的狀態和環境等等的因性而不斷地變動，此外，在傳輸的過程中，資料傳輸也有著不小的機率會因毀損或是遺失而造成傳輸中斷。因此，TCP 傳輸協定在無線網路的應用上受到了挑戰。爲了解決這類問題，我們提出了，可變動的 TCP timeout timer 演算法，降低無線環境對 TCP 資料傳輸所造成的負面影響。

Adaptive TCP protocol for Wireless Communication Systems

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Abstract

Supporting heterogeneous services are mandatory for 3G and beyond wireless systems. Using the wireline data transmission protocol might not be suitable for wireless systems. In this thesis, we will identify potential TCP performance problems in wireless environment where the transmission bandwidth is varied and errors are bursty. An Adaptive Timer-based control algorithm is proposed to improve the TCP performance in wireless communication systems.

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