中文摘要

本研究主要整合多媒體、生理訊號量測、網路通訊、資訊萃取與資訊安全等技術，研發一套智慧型住宅資訊平台，協助住民可以輕鬆掌握食、衣、住、行、育、樂、健康照護與居家安全等全方面的服務，落實「在地老化」長期照護之願景。

智慧型住宅資訊系統由四個主要子系統所所構成，(1)居家照護子系統：透過代理者和網路服務取代傳統的功能設計，可完成血壓計、血糖計、體脂計等生理量測等生理參數自動截取，提供住戶掌握每日生理資訊變化，並適時回饋適當衛教，達到健康照護的自我管理。(2)家電設備控制子系統:住戶透過觸控面板或遙控器可控制各式室內家電設備，同時對於居家安全(如防盜、火災煙霧偵測等)將自動監控，提高其居住品質與安全。(3)娛樂與生活資訊子系統：透過資料自動擷取技術，提供包括電子相簿、多媒體影音以及氣象、財經、農民曆等個人化生活資訊所需之娛樂平台。(4)物業管理子系統：提供保全、物流等服務支援，讓所有社區住戶都能受到最大的照顧。最終針對資料交換安全(AAA Server與金字塔型安全機制及高階加密標準)進行實作，期待達到住戶資料及隱私安全，最終實踐智慧住宅的概念。

為驗證系統效能及證實使用者的確可接受這樣的設計介面，本研

究設計了兩個實驗：(1)第一個實驗為系統效能測與分析，主要是評估社區多人訊息廣播時系統的傳輸效率。經過實驗得知，當模擬人數達 3000 人時，系統獲得回應的時間是 1348ms、1500 人是 702ms、500 人是 245ms，100 人是以下可於 55ms 之內完成；(2)第二個實驗為三個不同年齡層使用者(青年、中年、老年)滿意度調查。老年族群中(n=9)，平均滿意度為 87%；中年族群中 (n=13)，平均有 93%的滿意度；青年族群中(n=11)，有 97%的滿意度。購買意願層面，59%(n=19)的人願意購買，約 36%(n=12)的人願意每個月付 3000 元擁有智慧型住宅系統。

英文摘要

An intelligent residence information platform is developed after integration of multimedia, physiological signal measurement, Internet communication and information security in this study to help residents easily master comprehensive service in foods, clothing, housing, transportation, education, entertainment, health care and housing security in order to meet the vision of ageing locally.

The intelligent residence information system is composed of four major sub-systems: (1) home care: with agents and Internet service replacing traditional functions, physiological readings from sphygmomanometers, blood glucose meter and body fat meter of residents can be automatically captured. Health education can be provided where needed to have health self-management. (2) Electric home appliance control: residents control various electric home appliances with touch screen or remote controller; home security (e.g. burglary proof, fire detection) is under automatic monitoring to enhance living quality and security. (3) Entertainment and life information: with automatic information capture technology, residents enjoy personalized entertainment platform including e-albums, multimedia AV, weather forecast, business news and Chinese calendar. (4) Logistics management: security and logistics service enable residents to enjoy maximum care. Practical operation on information exchange security (AAA Server and pyramid security mechanism as well as high end encryption standard) is conducted in the hope to ensure information and

privacy of residents and, eventually, reach the goal of intelligent residence.

To testify system performance and prove that users do accept such design interface, two experiments are designed: (1) the first one is system performance test and analysis to evaluate transmittance efficiency of multi-people message broadcasting system in the community. When number of simulation people reaches 3000, system response time is 134ms; that at 1500 is 702ms; that at 500 is 245ms and that at 100 is 55ms; (2) the second is satisfaction survey of three age levels of users (young, middle aged and senior). In the senior group (n=9), average satisfaction is 87%; in the middle aged group (n=13), average satisfaction is 93%; in the young group (n=11), 97% feel satisfied. In purchase willingness, 59% (n=19) of people are willing to buy; 36% (n=12) of people are willing to pay NTD3000 per month to own intelligent residence.