中文摘要

本研究的主要目的，是以本體論概念建置一套遠距居家照護系統，以解決在地老化需求和系統服務的延展性。在系統擴充性方面，本研究先以 SOA 架構將系統服務分成流程與資料，接著再將同性質的流程歸類為特定任務，並藉由任務本體論以 XML 格式描述各特定任務中需要的代理者和資料，讓系統管理者可以從 XML 的描述中，輕易增減服務流程需要的功能和資料。在系統完整性方面，本研究在疾病異常評估的描述上是以 OWL 格式定義疾病的診斷標準和治療建議，其資料層級上共分五層，將慢性病的病名、診斷依據、治療建議、家族病史和治療級別作了細部定義，讓健康管理師能在此資料結構上描述各疾病的衛教資訊。在系統可近性方面，本研究不僅設計了簡易的輸入介面，更以直觀的圖文說明來協助使用者進行選單操作。

為了驗證系統效能及證實高齡者的確可以接受這樣的設計介面，本研究設計了三個實驗：(1)第一個實驗為本體論系統的效能分析，本研究將異常血糖資料分別輸入本體論系統和傳統三層式系統，藉由系統執行時間比較兩套系統在全部執行時間、量測時間和建議時間的效能；實驗結果顯示，本體論系統在全部執行時間 688.26ms，比傳統系統略高出 13ms(1.82%)，生理資料擷取時間 479.07ms，比傳統系

統略高出 7ms(1.45%)，而建議時間 209.19ms，比傳統系統略高出 7ms(2.68%)；因此可以得知使用本體論建置照護系統，執行時間略高於傳統三層式系統。(2)第二個實驗為多人連線對於網路服務的效能影響，本研究在 Intel Core2 Due E8400 的 CPU 環境下，由系統產生多個執行緒，不斷對本體論的網路服務發出需求，並記錄當人數遞減時，系統效能的變化；結果顯示，當人數 1500 人時，系統獲得回應時間是 66815ms、1000 人是 23038.91ms、500 人是 10690.31ms、100 人是 673.75ms、10 人是 79.53ms、1 人是 59.69ms；因此可以得知，本研究所開發之系統不僅可以同時服務超過 1500 人，且當人數在 100 人以內，系統能在 1 秒以內給予回應。(3)系統的滿意度調查，以養生村 15 名高齡者為實驗對象，針對系統的操作流程、視覺感受、資訊的完整性和需求與價值感四個面向進行滿意度調查。93%(n=14)的人認為選單的操作、進退出功能相當簡單，對於畫面的編排、直觀的圖片及字型大小也都相當滿意。93%(n=14)的人覺得電話響鈴的方式可以有效提醒自己吃藥，且看到藥物圖片也能清楚找到要吃的藥物。67%(n=10)的人，認為本系統在建議上，能協助對於卡路里或運動強度沒有概念的人更清楚知道如何去換算不足或超過的食量和運動量。至於購買意願方面，53%(n=8)的人願意購買，其中各佔一半的人分別願意每個月付 500 元和每個月付 1000 元享用此服務。

英文摘要

The primary purpose of the study is to apply the tele-home care service with the ontology to solve the needs of aging at home. We not only use service-oriented architecture to develop software, but also use ontology methodology to describe the service task and domain knowledge. All of the elder's health data and work flow are described by OWL. Base on the new system developing model, the caregiver cans organize personalized healthcare service for different elder more easily.

This study designs three experiments to verify system performance and user acceptance. (1) Performance analysis of ontology: We compare the differences between traditional three-tier system and the ontology system in all the execution time, measurement time and the suggestion time. The results showed that ontology system execution time in all is 688.26ms, which is slightly higher than the traditional system of 13ms (1.82%). The measurement time is 479.07ms, which is slightly higher than the traditional system of 7ms (1.45%). The suggest time is 209.19ms, which is slightly higher than the traditional system of 7ms (2.68%). Therefore, it could be known that the ontology system in execution time is a little worse than traditional system. (2) The performance of Web services in multiuser connection: this study create a number of threads to require the web services of ontology constantly in the Intel Core2 Due E8400 the CPU environment, and we record the changes in system performance when the number of threads reduced. The results showed that, when the number of 1,500 people, the system response time was

66815ms, 1000 people was 23038.91ms, 500 people was 10690.31ms, 100 people was 673.75ms, 10 people was 79.53ms, 1 person was 59.69ms. Therefore, the system can provide services to over 1500 people at the same time, and as user less than 100, the system can response it within 1 seconds. (3)The satisfactory survey: we find 15 elders to take a satisfaction survey for the operate process of the system, the visual experience, the integrity of information and the value. 93%(n=14) of people think that the menu operation is easy,. In the visual, the screen layout, intuitive pictures and font size are quite satisfactory. 93% (n=14) of people think that the system can remind themselves to take medicine what they need to eat. 67% (n=10) of people believe that the system will help people who have no concept in Calories and exercise intensity to improve the eating and exercise. As for the willingness to buy, there are 53% (n=8) of people willing to buy and one of the half were willing to pay 500 dollars and 1,000 dollars a month to enjoy this service.