

智慧型居家服務代理者社群架構之研究與設計

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摘要

本論文目的是在OSGi (Open Service Gateway initiative)環境下以分散式合作解題 (Cooperation Distributed Problem Solving, CDPS) 計畫及多重代理者架構(Multi-Agent Architecture)建立智慧型居家服務代理者社群(Intelligent Home Service Agent Federation, IH-SAF), 此一聰穎的智慧型環境(Smart Environment)可以讓各種不同類型的網路服務相互流通分享, 透過OSGi Framework部署社群中服務提供者(Service Provider)所提供的服務, 服務代理者可以移動至用戶端並且動態地執行指定的任務。IH-SAF架構是以社群的型態設計服務代理者社群階層(Service Agent Federation Hierarchy), 透過OSGi Framework部署社群中服務提供者(Service Provider)所提供的服務; 以Jini技術加以實現社群中代理者的自動發覺與註冊(Auto-Discovery/Registry)管理能力; 並以服務代理者移動至用戶端並且動態地執行指定的任務。設計與實作時為使服務代理者元件與代理者社群架構的開發過程能模組化並且在使用上更具彈性, 本系統利用統一塑模語言(Unified Modeling Language, UML)為IH-SAF建立視覺化模型, 透過需求分析, 以使用者觀點為中心出發, 建立使用案例(Use Case Diagram)模型; 再以結構觀點、行為觀點、實作觀點、部屬觀點對IH-SAF進行分析與設計; 並以服務代理者在居家保全服務的應用為例, 說明服務代理者透過分散式合作解題計畫完成群組與群組之間、以及各類型服務代理者與服務代理者之間的合作協調工作如何完成。IH-SAF系統開發是以嵌入式系統為宗旨, 系統具有微型程式的特色, 並且執行時可以動態的移除無用的服務以減少裝置資源浪費, 因此本系統適合嵌入小型移動裝置, 作為操控資訊家電的能力, 並經由居家開道的整合與連接達到區域網路與廣域網路之間的互相操控, 可以建置無所不在的管理環境。

關鍵詞: 開放式服務開道(OSGi)、分散式合作解題(CDPS)、智慧型代理者(Intelligent Agent)、智慧型居家服務代理者社群(Intelligent Home Service Agent Federation)、居家網路。

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