A11-135
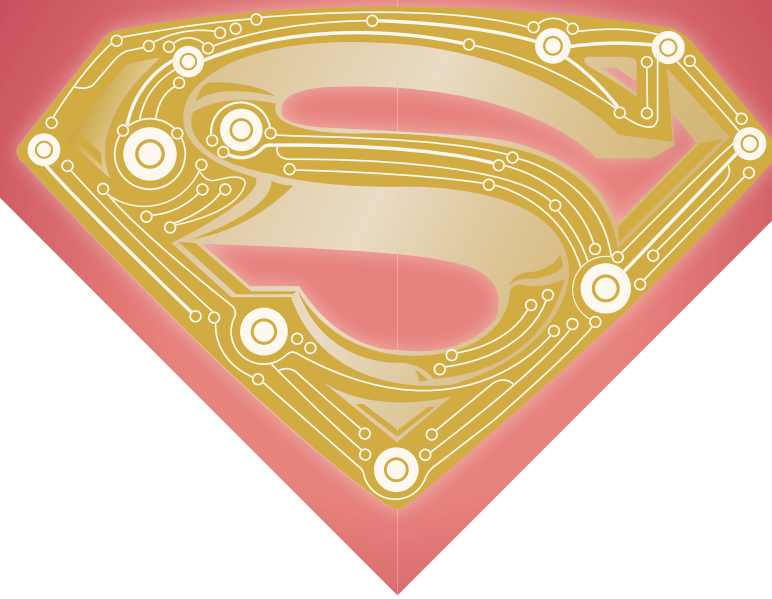
作品名稱　**具硬體加速且可自動設定解析度的向量圖形電子書閱讀器**
Resolution–Independent and Hardware Accelerated Vector Graphics E-book Reader

隊伍名稱　**滾石俱樂部 RT Rockers**
隊　　長　**陳碩鴻**　清華大學資訊工程研究所
隊　　員　**林筱玫・陳易成・洪徹易**　清華大學資訊工程研究所
指導老師　**衛信文**　清華大學資訊工程研究所

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作品名稱　**3C智慧型冰箱**
3C Intelligent Refrigerator

隊伍名稱　**狗與貓 Dogs and cats**
隊　　長　**陳昱同**　聖約翰科技大學電機工程學系
隊　　員　**李遠樵・黃博彥**　聖約翰科技大學電機工程學系
指導老師　**徐椿樑**　聖約翰科技大學電機工程學系

作品摘要

近年來，隨著資訊的數位化與手持式裝置的普及，電子書已不再是遙不可及的數位產品，人們開始可以將一整個書櫃的書本放進一個電子書閱讀器裡帶著走，並能在任何時間與地點享受閱讀的樂趣，因此電子書閱讀器已在全球掀起一陣旋風，成為市場上的大熱門。

然而在目前的電子書市場裡，以文字為主的書籍佔了絕大部份，以圖形為主的書籍卻佔得非常的少。這是因為以圖形為主的電子書受到技術發展的限制，還無法有效率儲存以圖形為主的內容，因此造成出版商無法任意的出版圖書。

因此本作品自行設計了一顆向量圖形繪圖晶片來加速向量圖形的產生，以補足手持式裝置運算能力的不足，以製作低功耗且高效能的電子書閱讀器。並且透過對OpenVG標準程式介面的支援，廣泛的增進其他以向量圖形系統為介面的裝置，讓更多的嵌入式系統能順暢的運行華麗的介面和豐富的多媒體內容。

ABSTRACT

In recent years, with the digitalization of information and popularity of handheld devices, e-books are no longer unreachable digital products. People can put books of an entire bookcase into an e-book reader, and can enjoy the fun of reading at any time and place. Hence, e-book readers has made a big storm in the world and become the favorite products on the electronic market.

Compared to the graphic-based books, however, text-based books account for the majority of the current e-book market. Because the limitation of the technology, the graphic-based content cannot be efficiently stored and publishers cannot readily publish books.

Therefore, to compensate the lack of computing power of handheld devices, our work is to design a vector graphics chip to speed up the rendering process of vector graphics and then produce the low-power and high performance e-book readers.

Moreover, through the support of the OpenVG standard, more embedded devices can run gorgeous interface and provide rich multimedia content smoothly.

作品摘要

我們希望以冰箱作為廚房的控制核心，可以藉由冰箱內的感應機制，偵測冰箱內食品是否低於餘紲量。家中的主人可透過視覺觀看冰箱上掛載的嵌入式平台PXA300 之觸控螢幕以視覺方式查詢冰箱內部食物之餘紲量，可完全一次了解目前冰箱內部所有食品存量及家電控制狀態，並可以觸控方式操控智慧型家電控制，當食品存量單位為預設最低單位為『一』時，低於最低單位時，則會透過藍牙主控端傳送相對應食品採購代碼，藉由電話網路系統撥打使用者預設電話號碼至使用者，使用者接通電話時可於話筒內部聽到語音播放之食品存量不足，貼心提醒使用者訂購。除此，我們賦予冰箱智慧化的功能，使用者可於戶外透過一般市話、隨身手機撥打家中電話號碼即可進入電話控制家電系統，並透過藍牙無線模組遙控家電。

功能總項目為物品自動偵測系統、GIS 監控系統、藉由電話網路控制藍牙無線模組遙控家電。

ABSTRACT

Abstract—This study is a creative and initial work focused on designing an intelligently automatic detecting and sensor system for home appliances being smartly interactive with mankind with speech in the living space. There are so many home appliances in our living space, and how to make them intelligent so as to let our life more safety, convenient, and comfortable will be a challenge to our knowledge. In this study, some technique and skills especially related 3C (computer, communication, content) were developed to make our home appliances intelligent such as radio remote control, sensors invented by researchers, auto-dialing system, and image analysis with CCD (charged-coupled device) image-fetched. Through linking the sub-systems' function, the main function of the home appliance worked smartly—in this case, we use a refrigerator as the center of all home appliances in a family, the refrigerator could sense the lack of the food, drinks, even irregular shape fruits through all designed sensors and CCD images analysis system, and it also could auto-dial the vendors to deliver the thing those were sensed insufficient. In addition to detect capability, the refrigerator could assign works to other appliance through inter-net or wireless radio remote control system.

Index Terms—3C, Intelligent Home Appliance, CCD, DSP