

# 卡片式電腦應用介紹

## Introduction to Application of Credit Card-Sized Computer

Yan Wai – Technical Marketing Engineer



# Who are RS? 誰是RS?

**RS Components** is the World's Leading High Service Distributor of Electronics and Maintenance Products.

RS Components是世界領先的電子和維護產品的分銷商。



**Direct operations in 32 countries**  
在32個國家直接營運

**13 warehouses worldwide**  
在全球有13個倉庫

**44,000 packages everyday**  
每天送出44,000個包裹

**DESIGNSPARK**



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# Some of our leading suppliers

我們的一些主要供應商

**OMRON**

**RENESAS**

**Tektronix**<sup>®</sup>

**TE**  
connectivity

**ARDUINO**

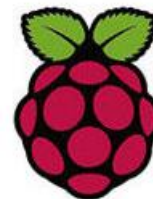
**ARM**<sup>®</sup>



**MICROCHIP**



life.augmented



**Raspberry Pi**

**Panasonic**

**SIEMENS**

**FLUKE**<sup>®</sup>

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# RS University RS 大學計劃

**RS University** is focused on providing the innovators and engineers of tomorrow with the resources to achieve greatness. RS大學計劃專注於為未來的創新者和工程師提供設計資源來激發創新。

RS University can offer educators and universities:

RS大學計劃可以為教師和大學提供：

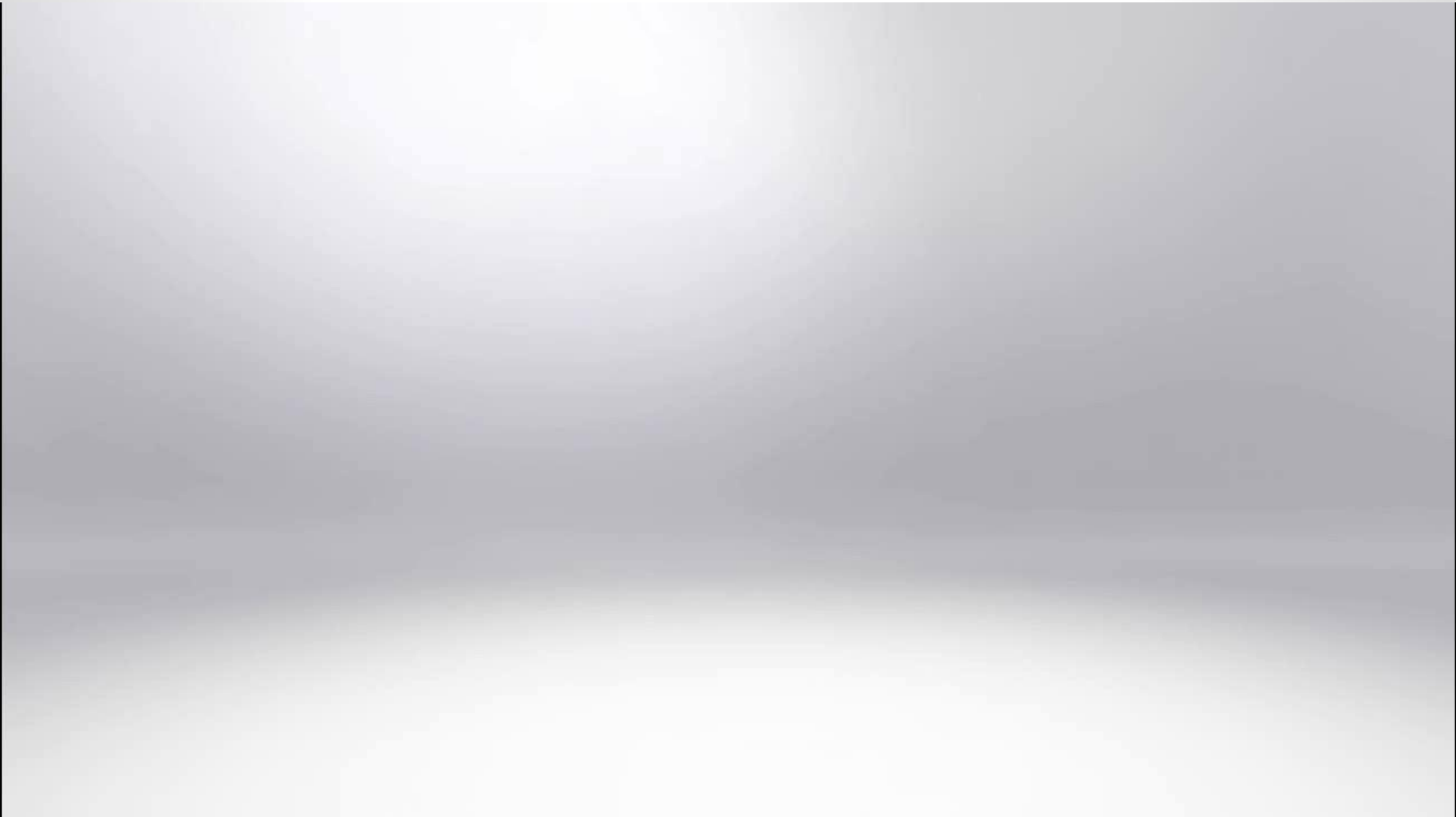
- Powerful design tools 強大的設計工具
- Professional teaching materials 專業教材
- Sponsorships 贊助
- RS Student Shops RS學生商店
- And much more 還有更多



**DesignSpark - Community for Engineers and Students**

**DesignSpark - 為工程師和學生而設的社區**

Video 影片: <https://youtu.be/zGBKrEPPUkU>



# Microcontroller Hardware Development Platform

## 單片機的硬件開發平台



	<i>Arduino</i>	<i>chipKIT</i>	<i>Gadget Renesas</i>	<i>Launch Pad</i>
<i>Company 公司</i>	<i>Atmel</i>	<i>Microchip</i>	<i>Renesas</i>	<i>TI</i>
<i>Processor 處理器</i>	<i>Atmega (8 bits) SAM3X8E (32 bits) ARM Cortex-M3</i>	<i>PIC32 (32 bits)</i>	<i>RX63N (32 bits)</i>	<i>MSP430 (16 bits)</i>
<i>IDE/OS 操作系統</i>	<i>Arduino IDE</i>	<i>MPLAB/Arduino IDE (with addon)</i>	<i>Cloud GNU base</i>	<i>Energia IAR/CCS (limited code size)</i>
<i>Open Source/ OSHW? 開源/硬件開源</i>	<i>Y/Y</i>	<i>Y/Y</i>	<i>Y/N</i>	<i>Y/Y</i>
<i>RS Part Number RS產品編號</i>	<i>7154081 (Uno) 7154084 (Mega)</i>	<i>7377950 (Max32) 7377956 (Uno32)</i>	<i>7616766(GR ) 7616778(GR Full)</i>	<i>7122649</i>
<i>Price 價格 (USD美元)</i>	<i>~20-50</i>	<i>~30-65</i>	<i>~45-65</i>	<i>~12</i>

# ARM Processor Hardware Development Platform

## ARM處理器的硬件開發平台



	Raspberry Pi 2	mbed	ST Discovery kit	BeagleBone Series
Company 公司	Broadcom	NXP/Freescale	ST	TI
Processor 處理器	ARM Cortex A7 (32 bits)	ARM Cortex M0, M3 (32 bits)	ARM Cortex Series (32 bits)	Cortex A8
IDE/OS 操作系統	LinuxOS	Online Compiler IDE at mbed.org	Atollic, IAR, Keil, ST- Link, GNU	LinuxOS, Android
Open Source/ OSHW? 開源/硬件開源	Y/Y	Y/Y	N/N	Y/Y
RS Part Number RS產品編號	7568317 (Model A) 7568308 (Model B) 832-6274 (Pi 2)	7039238(LPC1768) 7510725(LPC11U24) 7653727(FRDM-KL25Z)	7587554 (Discovery F0) 7455434 (Discovery F4)	7160430 BeagleBoard-xM 7588982 Beaglebone 7753805 Beaglebone black
Price 價格 (USD 美元)	~25-35	~15-70	~10	~50-220

# Arduino Entry Level 入門級

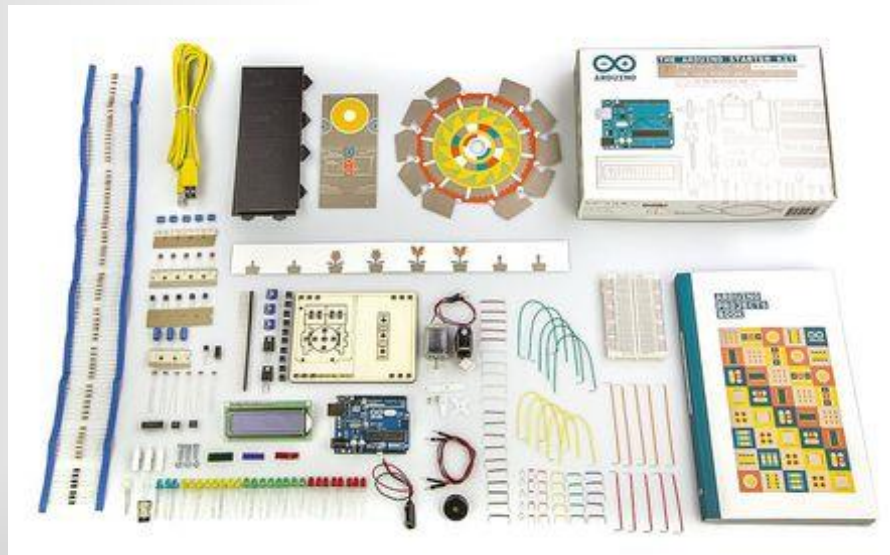




# Arduino Starter Kit

## Arduino入門套件

- An educational tool for newcomers to Arduino and electronics. 它是針對Arduino和電子初學者的教育工具
- **Arduino Projects Book:** gain step-by-step knowledge on code, circuits and bread-boards via 15 suggested projects.  
Arduino專案書：通過15個建議的專案來一步一步學習代碼、電路和麵包板的知識
- **Massimo Banzi** can introduce you to each of the projects in YouTube videos. Massimo Banzi 會在YouTube影片中介紹和教你如何完成專案



# Enhanced Features 進階功能

- Shields 擴展板: interchangeable add-on modules 可更換的附加模塊



# Internet of Things 物聯網



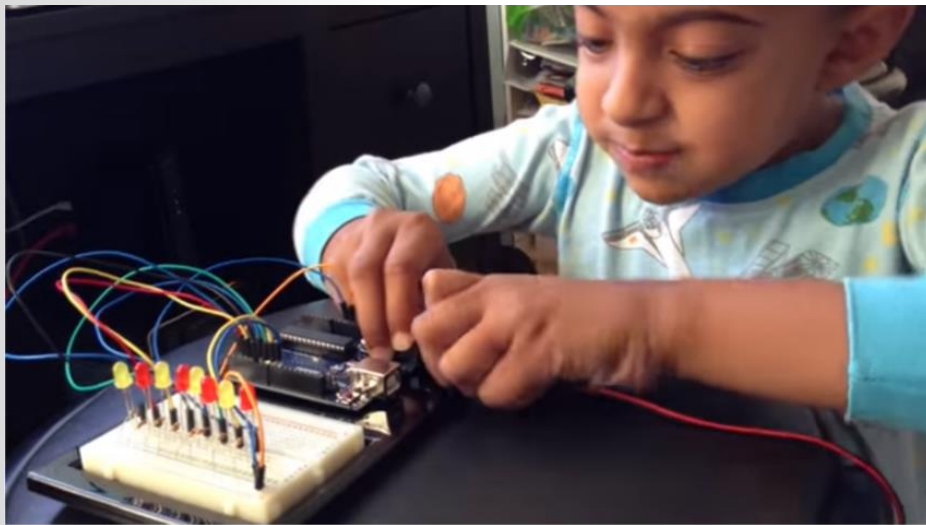


# Arduino Starter Project for Kids

## 適合小孩的Arduino入門專案

Video 1 影片 1: <https://www.youtube.com/watch?v=t6fKs3Zbnb0>

Video 2 影片 2: <https://www.youtube.com/watch?v=VlkyaTQ6lqQ>

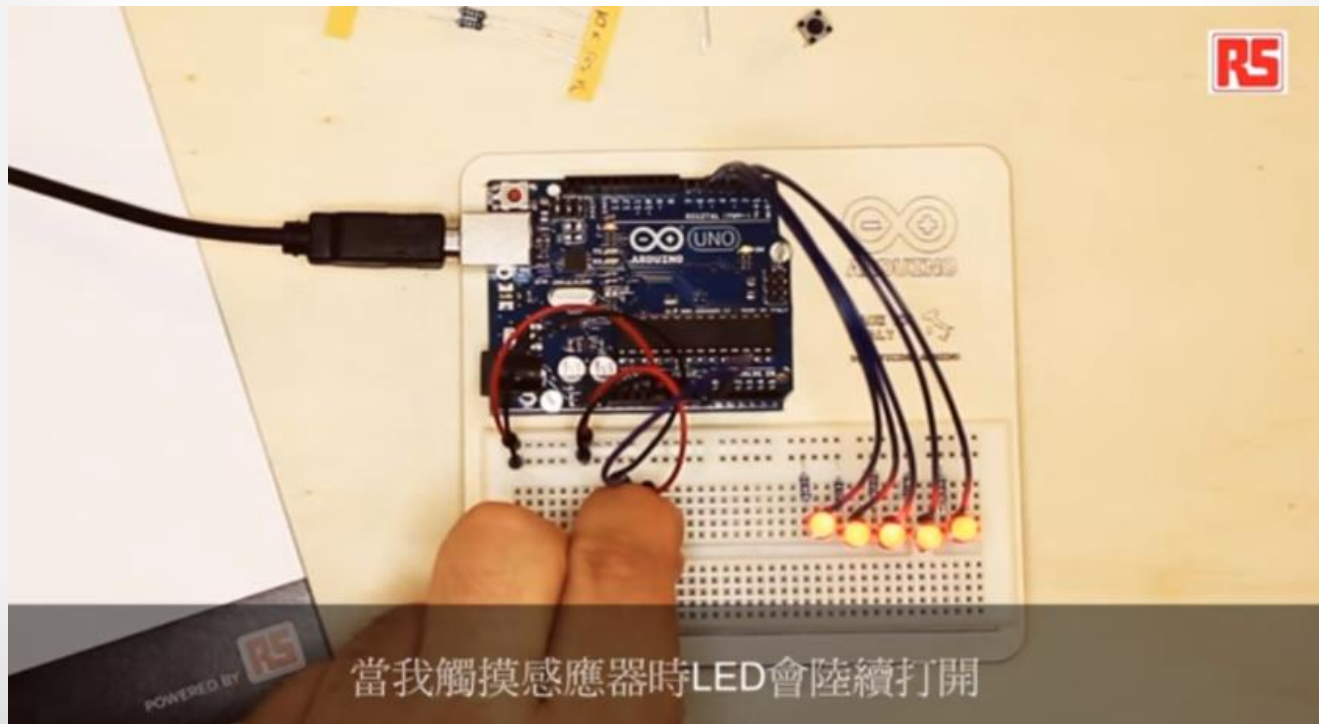


Arduino Halloween Project - Motion sensing pumpkin with an evil laugh

# Arduino Starter Kit Tutorial: LOVE-O-METER

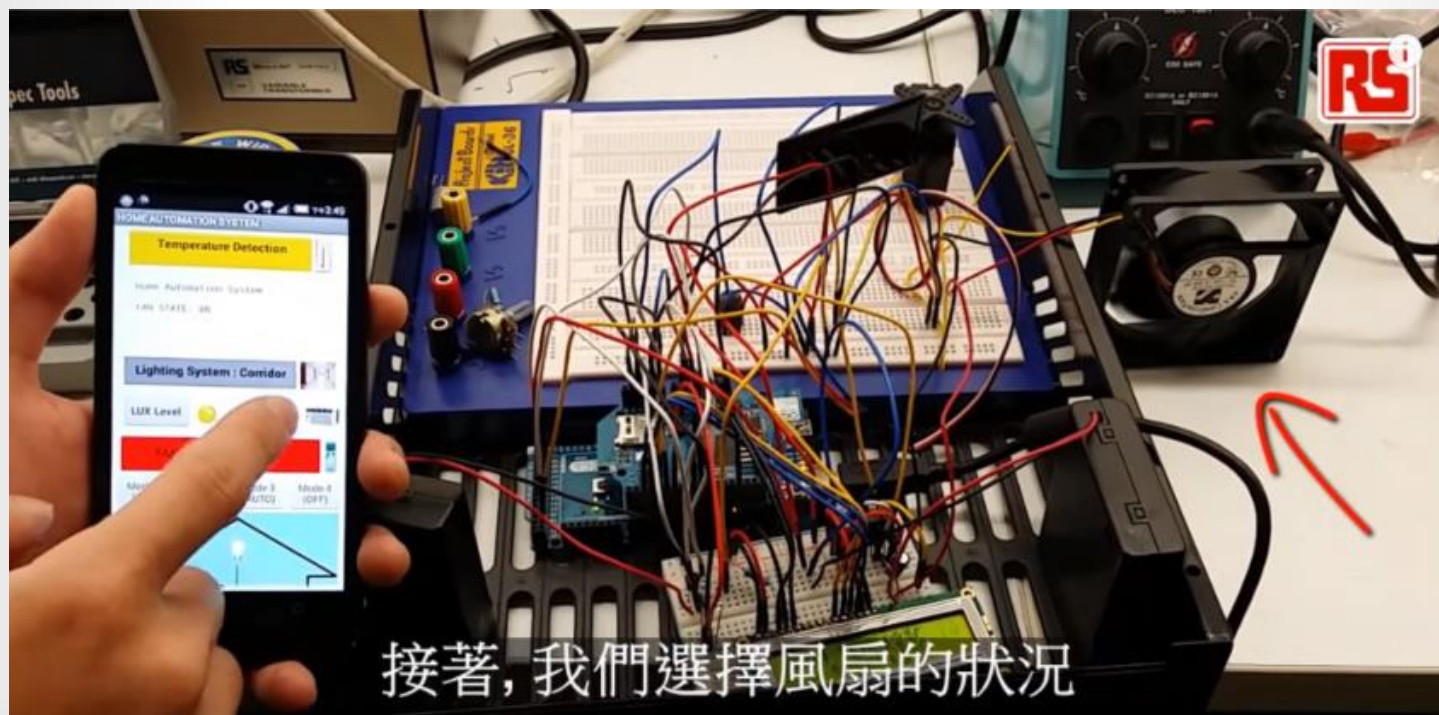
## Arduino 入門套件教學: LOVE-O-METER 溫度計

- Video 影片 : <https://www.youtube.com/watch?v=Ox9mC0nLW3c>
- Playlist of Arduino Starter kit video tutorial:  
Arduino 入門套件教學影片播放列表: <http://bit.ly/1PVYg5t>



## Simulation of smart home system 模擬智能家居系統

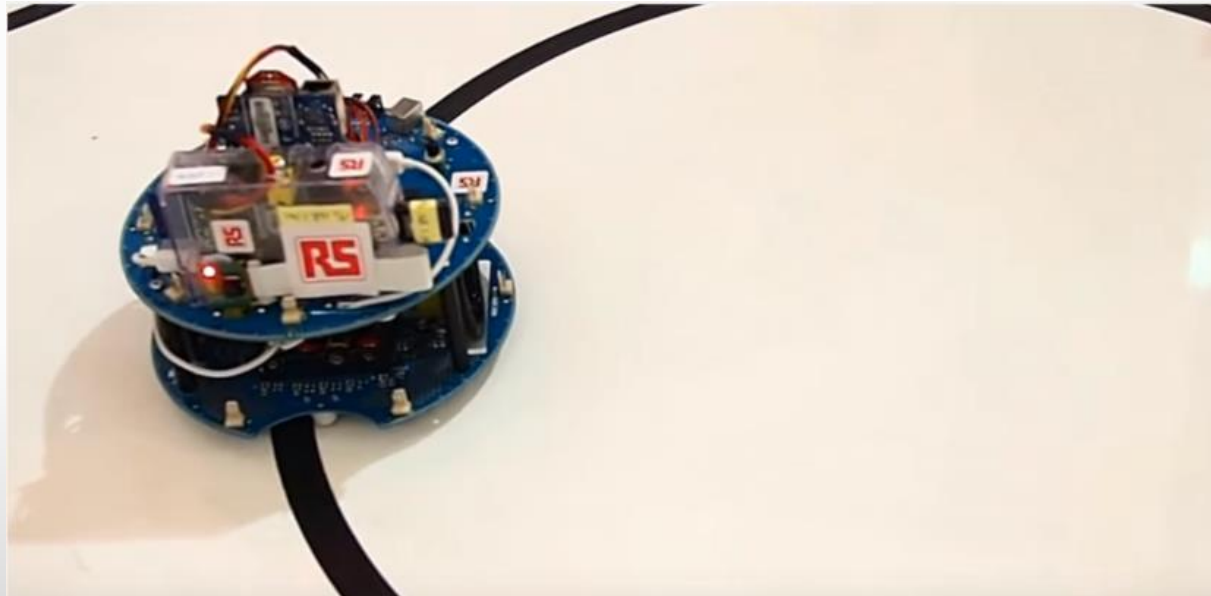
- Using Arduino board and components to simulate smart home system. 利用Arduino板和零件去模擬智能家居系統
- Video 影片: <https://www.youtube.com/watch?v=WZShB4CZmts>



# WiFi Remote Arduino/Raspberry Pi Robot

## 無線遙控的Arduino/樹莓派機械人

- Video 影片: <https://www.youtube.com/watch?v=1IVzW0OlcwE>
- Arduino Robot 機械人: Follow the black line to move or controlled by apps in smart phone. 跟著黑線走或使用手機應用程式控制
- Raspberry Pi +Camera Module: 樹莓派 + 相機模組 :  
Capture video and live stream to a monitor  
負責錄影和即時串流並顯示在屏幕中





# Automated Lego Train 樂高自動化列車

Video1 短片1: [https://www.youtube.com/watch?v=7c7w\\_saIDNc](https://www.youtube.com/watch?v=7c7w_saIDNc)

Video 2 短片2: [https://www.youtube.com/watch?v=Y\\_WSGljVTmA](https://www.youtube.com/watch?v=Y_WSGljVTmA)



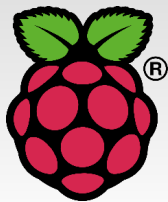
LEGO Mindstorms Metro Station with Sliding Doors

LEGO Mindstorms地鐵站

Video 短片 : <https://www.youtube.com/watch?v=Noi9sJfFLxw>



# Raspberry Pi



## Raspberry Pi 2 型號 B

Raspberry Pi 2 Model B



新一代Raspberry Pi 2 型號 B 價格不變，處理能力增強6倍以上及配備新的四核處理器和1GB RAM！

## Raspberry Pi 型號 B+

Raspberry Pi Model B+



Raspberry Pi 型號 B+ 提供一些重要改良功能，包括 40 針腳 GPIO、4x USB、省電達 30% 的節能效率、micro SD 卡插槽，以及電路

## Raspberry Pi 型號 A+

Raspberry Pi Model A+



Raspberry Pi A+款，相比較於B+款，體積更小，功耗更低，兼具HAT兼容的40針GPIO，現已可訂購，僅售HK\$192.06。

## Raspberry Pi 運算模組

Raspberry Pi Compute Module



尺寸規格小巧的 Raspberry Pi，最適合用於嵌入式設計。

## SparquEE CELLV1.0



使用無線通訊開發套件，輕鬆新增全球無線通訊功能。

## 原廠 Pi 外殼

Raspberry Pi official case

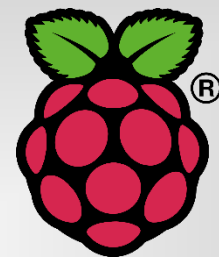


Raspberry Pi 2 型號 B 和 B+ 的完美專用外殼。

**For more information:**

EN: <http://bit.ly/1KJh7d5>

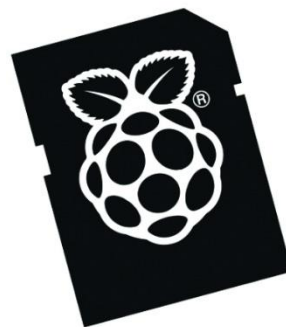
中文: <http://bit.ly/1MwSnMx>



## Raspberry Pi Accessories 配件



Raspberry Pi Case 外殼



SD Card with Raspberry Pi OS Installed  
安裝了樹莓派OS的SD卡 /micro SD卡



Ethernet cable  
以太網線



Li-Ion Rechargeable Power Bank 鋰離子移動電源  
(2200mAh / 5000mAh)



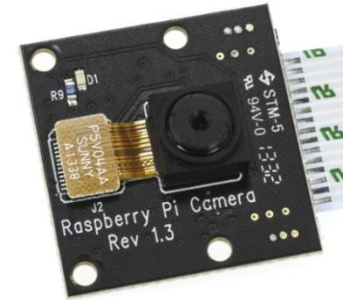
Power Supply 電源



**USB 2.0 Wireless Adapter**  
**USB2.0無線適配器**



**Raspberry Pi Camera Module**  
**樹莓派相機模組**



**Raspberry Pi IR Camera**  
**樹莓派紅外攝像機**



**RasPiComm I/O Board**  
**RasPiComm 輸入/輸出  
擴展板**



**Gertbot Motor Control Board**  
**Gertbot摩打控制板**



**Raspberry Pi Serial I/O expander**  
**樹莓派串行輸入/輸出  
擴展板**

# Raspberry Pi Official Touch Panel 官方觸控屏

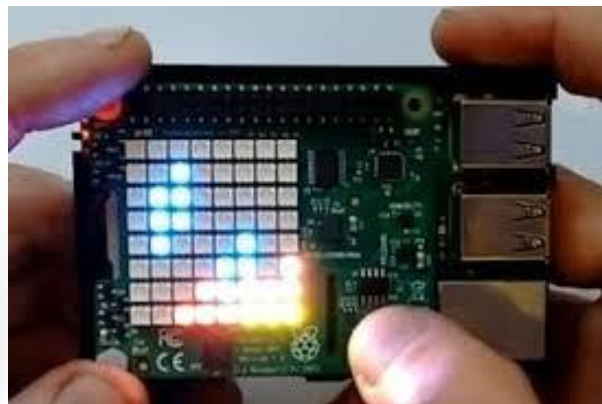
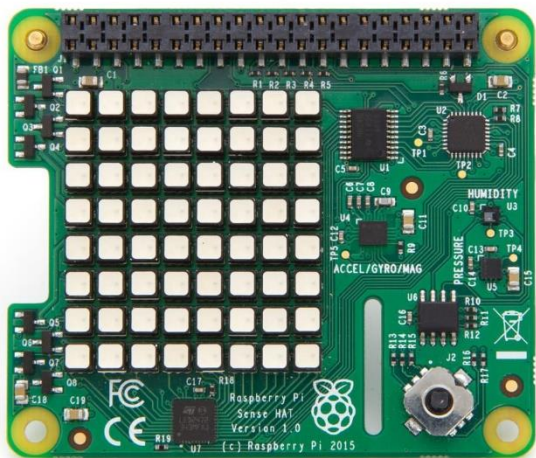
- 7 inch display 7寸顯示屏
- Multi-touch capacitive touch screen 多點觸控的電容式觸控屏
- 800 x 480 pixel resolution 800 × 480像素的分辨率
- 24-bit RGB colour 24位RGB顏色
- No electronic interference 無電子干擾
- Full Raspbian OS functionality without a keyboard and mouse 不需鍵盤和滑鼠也能完全使用Raspbian OS功能
- Video 影片: <https://www.youtube.com/watch?v=flgM9umyYNc>
- Buying link 購買連結: <http://bit.ly/1Mk74Mw>



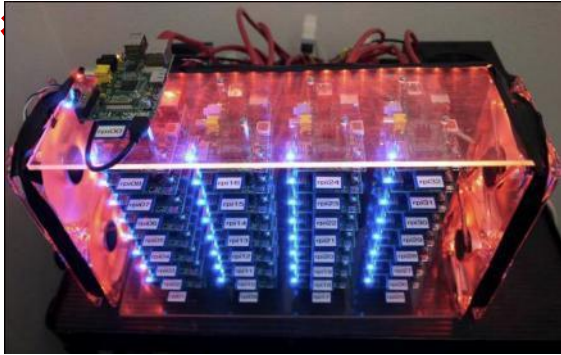


# Raspberry Pi Sense HAT 樹莓派 Sense 擴展板

- It provides you with plenty of sensing functionality. 它為您提供了大量的感應功能。
- 8 x 8 LED display 8×8的LED顯示屏
- Inertial Measurement Unit (IMU) 慣性測量單元
- Barometric air pressure sensor 氣壓感應器
- Temperature sensor 溫度感應器
- Humidity sensor 濕度感應器
- 5-button joystick 5-按鈕遊戲桿
- Video 影片 : <https://www.youtube.com/watch?v=ZtrasuBu-YQ>
- Buying link 購買連結: <http://bit.ly/1jTk6uy>



# Raspberry Pi – Application 應用



32-way Raspberry Pi Cluster  
樹莓派超級電腦



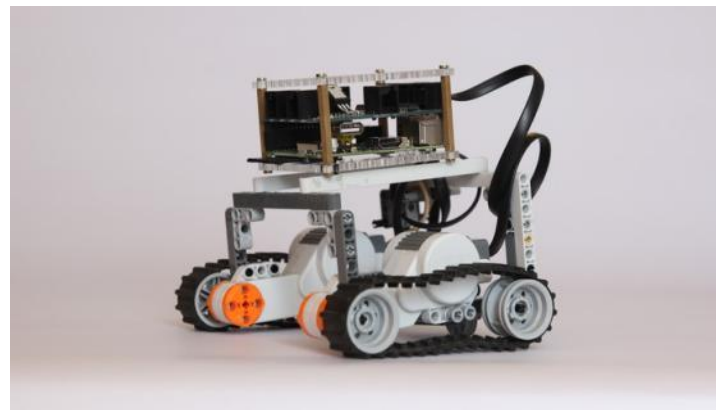
Car connectivity solution  
汽車連接解決方案



Arcade cabinet 街機



Smart TV 智能電視



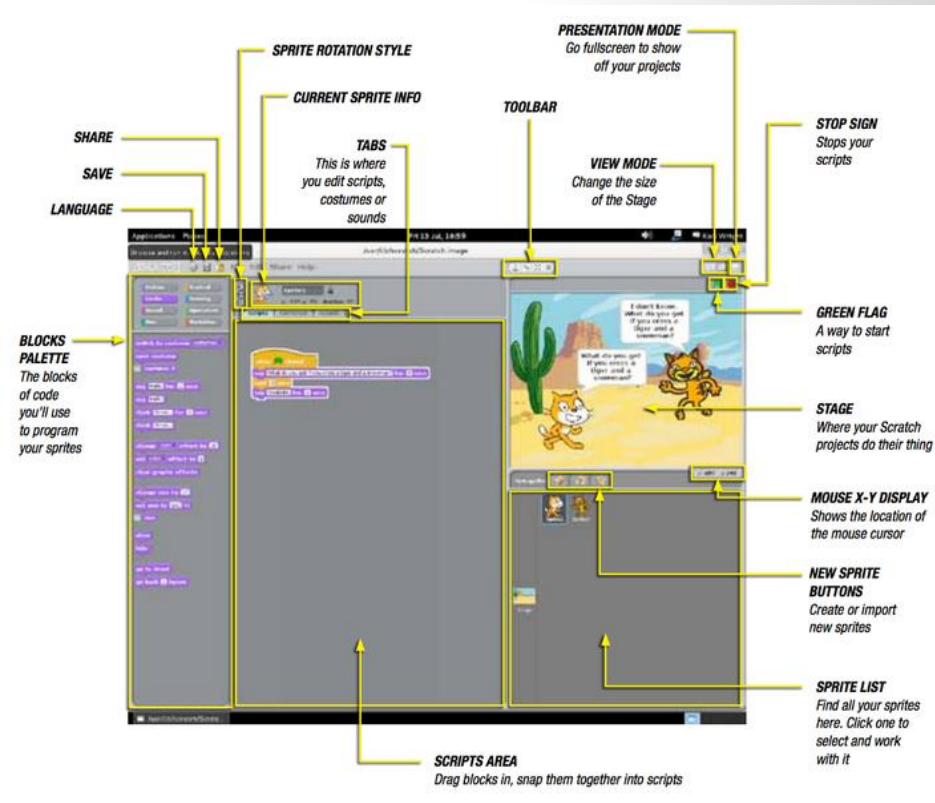
BrickPi - Raspberry Pi based  
Robot 樹莓派機器人



Home made GPS  
receiver GPS接收器

# Raspberry Pi Projects for Kids 適合小孩的樹莓派專題

- Learn to program with Scratch  
利用Scratch來學習編程
- It allows kids to create programs without having to learn code, creating animations and games with a drag-and-drop interface. 它讓小孩不需學習代碼也能建立程式，用拖放的界面就能建立動畫和遊戲。
- Video 影片：  
<https://www.youtube.com/watch?v=Oun1QfDAtn8>





# Raspberry Pi Projects for Kids 適合小孩的樹莓派專題

- Turn your Raspberry Pi into a retro game console 把你的樹莓派變成懷舊遊戲機
- Video 影片: <https://www.youtube.com/watch?v=00QyL0AgPAE>

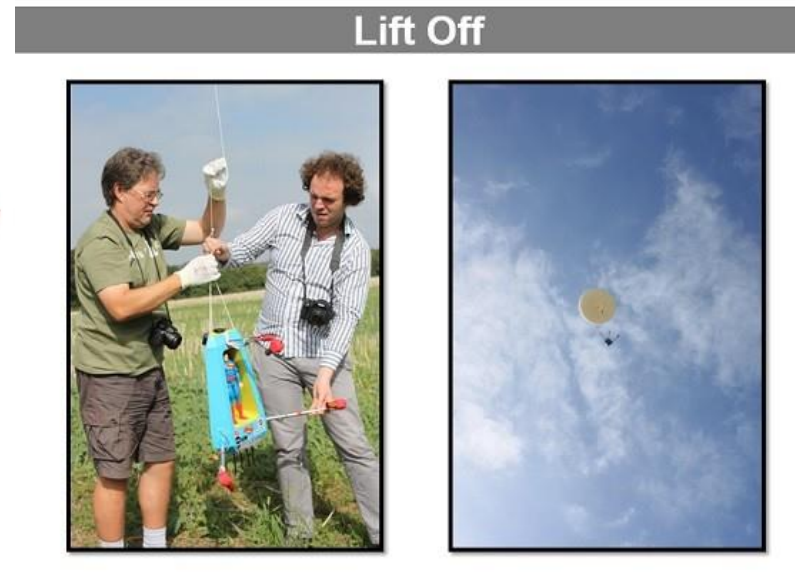
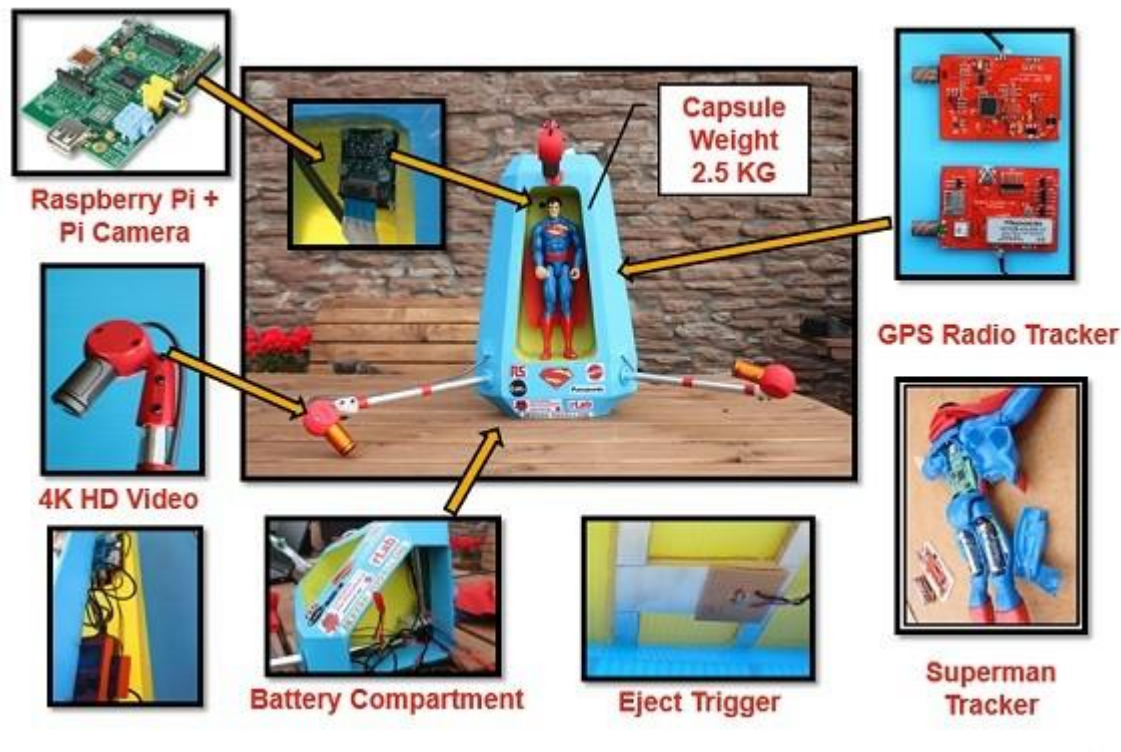




# Superman Space Travel 超人的太空旅行

Video 影片: <https://www.youtube.com/watch?v=0xi44zL8cBI>

Blog 文章: <http://www.rs-online.com/designspark/electronics/eng/blog/hack-superman-launch-day>



# Teaching Resources 教學資源

<https://www.raspberrypi.org>

**BLOG** **DOWNLOADS** **COMMUNITY** **HELP** **FORUMS** **RESOURCES**

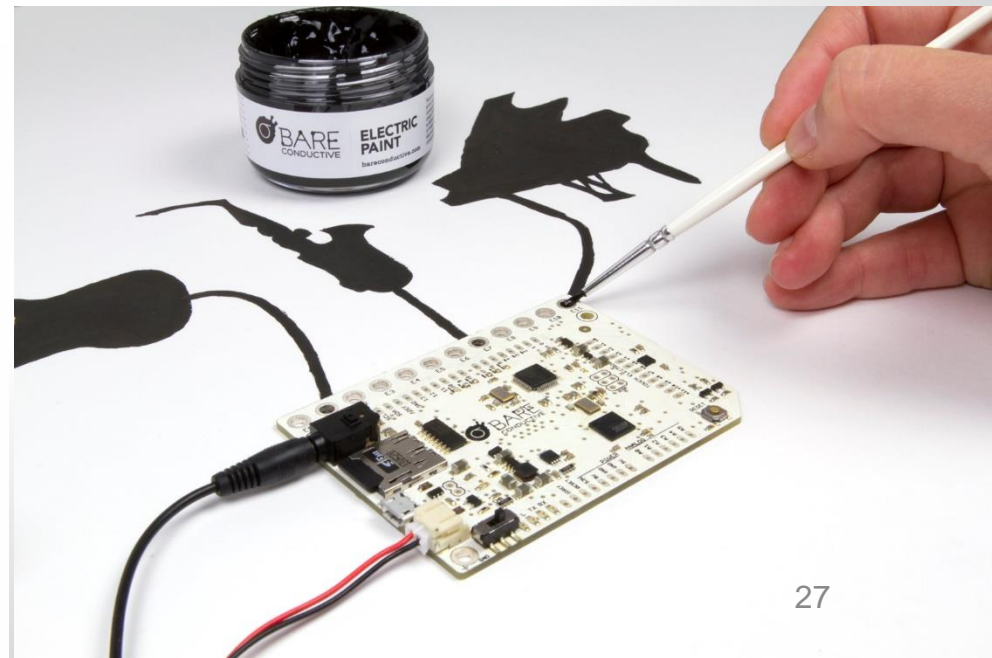
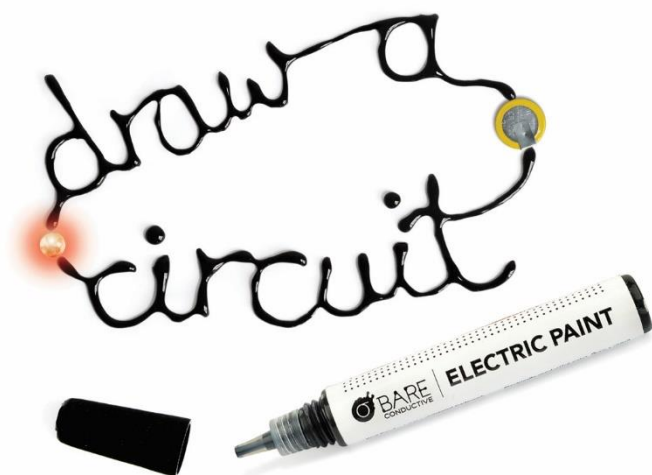
## TEACH RESOURCES

Schemes of work to teach with Raspberry Pi

- SENSING SPACE**
- ASTRO PI TEACHERS' GUIDE**
- TEACHERS' CLASSROOM GUIDE**
- SORTING HAT LESSON**
- NETWORKING LESSONS**
- GETTING STARTED WITH RASPBERRY PI LESSON**
- TURING TEST LESSONS**
- SONIC PI LESSONS**
- CODER HTML CSS LESSONS**

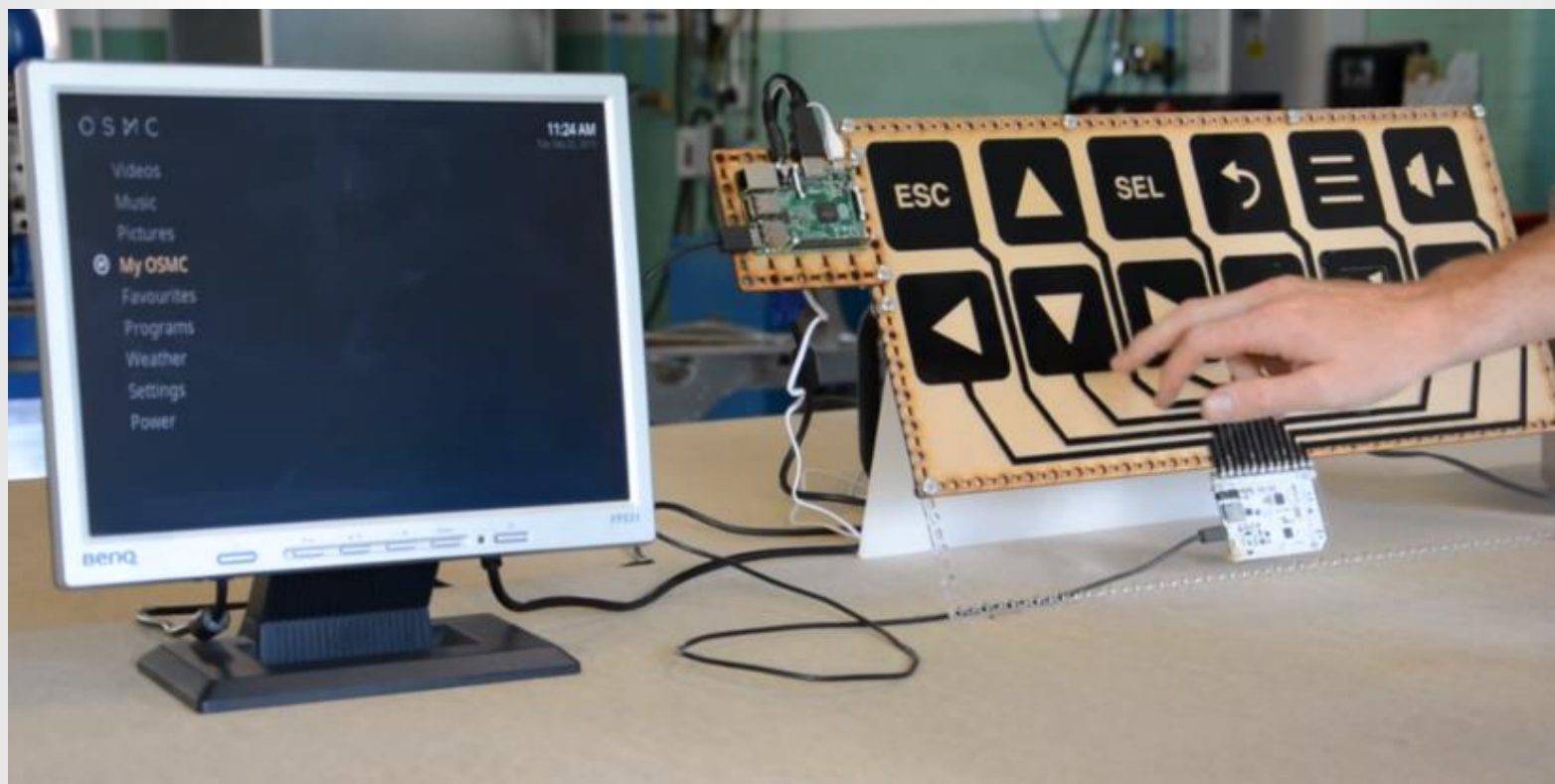
# Bare Conductive Electric Paint 導電油漆

- Its just like normal paint, except that it conducts electricity!  
它就像普通的油漆，但擁有導電性能！
- Video 1 短片1: <https://www.youtube.com/watch?v=dKFRweXeI90>
- Video 2 短片2: <https://www.youtube.com/watch?v=xju4fj1pOOE>
- Buying link 購買連結: <http://bit.ly/1PVDh2F>



# Raspberry Pi + Bare Conductive 樹莓派 + 導電油漆

Video 影片 : <https://www.youtube.com/watch?v=AgKZjrS7VwI>





# Buying Website 購買網站

English: <http://hken.rs-online.com/web/>

中文: <http://hkcn.rs-online.com/web/>

The screenshot shows the RS Components website homepage. At the top, there is a search bar with the RS logo on the left and a shopping cart icon on the right showing a total of HK\$330.00. Below the search bar is a navigation menu with options like '所有產品', '我們的品牌', '新產品', '我的帳戶', and '服務'. The main content area features a large banner with the text '全新與改善功能 多虧您的意見回饋, 尋找產品前 所未有地輕鬆' and a red button labeled '瞭解詳情'. Below this is another banner with the text '物聯網可讓你更輕鬆!' and a diagram illustrating IoT connectivity. The bottom section is divided into three columns: '防護與安全產品' (Personal protective equipment), '測試與測量' (Test and measurement equipment), and 'RS專業認證產品' (RS Professional Certified Products). The right sidebar contains a login section with a '登入' button, a '歡迎來到RS' message, and contact information including a phone number '(852) 2421 9898' and a '回應' button. There is also a '快速訂購' (Quick Order) section with a table for adding items to the cart and a 'DESIGNSPARK' logo at the bottom.

Sales Contact:

Rebecca Yiu

[Rebecca.Yiu@rs-components.com](mailto:Rebecca.Yiu@rs-components.com)

Tel: 26106432

# Social Media 社交媒體

YouTube Channel: <http://www.youtube.com/user/DesignSparkHK>

Facebook: <https://www.facebook.com/DSChinese>

The image displays a collage of social media content for DesignSpark. On the left, a grid of YouTube video thumbnails is shown, including titles like "Planes in DesignSpark PCB", "Introducing the FRAM Experiment...", "DesignSpark PCB - Translate to P...", "video\_microturbina\_16052011.m4v", "Working around the screen in De...", and "DIY DesignSpark PCB". In the center, a Facebook page for "DesignSpark Website" is visible, featuring a cover photo with the text "THINK PROTOTYPE INNOVATE" and 4,919 likes. To the right, another Facebook page for "DesignSpark Electrical" is shown, with a cover photo that says "立即轉用 DESIGNSPARK Electrical" and 2,570 likes. The bottom right of the collage features a graphic with the text "Think | Prototype | Innovate | DesignSpark" and "COMPREHENSIVE INTEGRATED ARTS LIBRARY".

## Questions 問題

- 1. Please give two examples of credit card-sized computer.  
請講出兩個卡片式電腦的例子。**
- 2. Where can you buy Raspberry Pi?  
在哪裡可以購買樹莓派？**
- 3. Name one of the Raspberry Pi accessories.  
請舉出一個樹莓派配件的例子。**
- 4. What is the differences between Raspberry Pi and Arduino?  
樹莓派和Arduino有什麼分別？**
- 5. What do you want to create with credit card-sized computer?  
你想用卡片式電腦做什麼創作？**

**Thank you! 謝謝!**