

# 專題期中報告



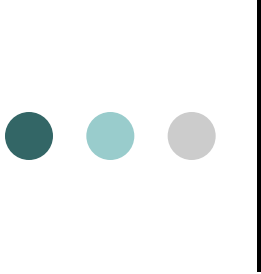
## Kinect應用：動作辨識



指導老師：黃敬群

1098104341 陳義仁

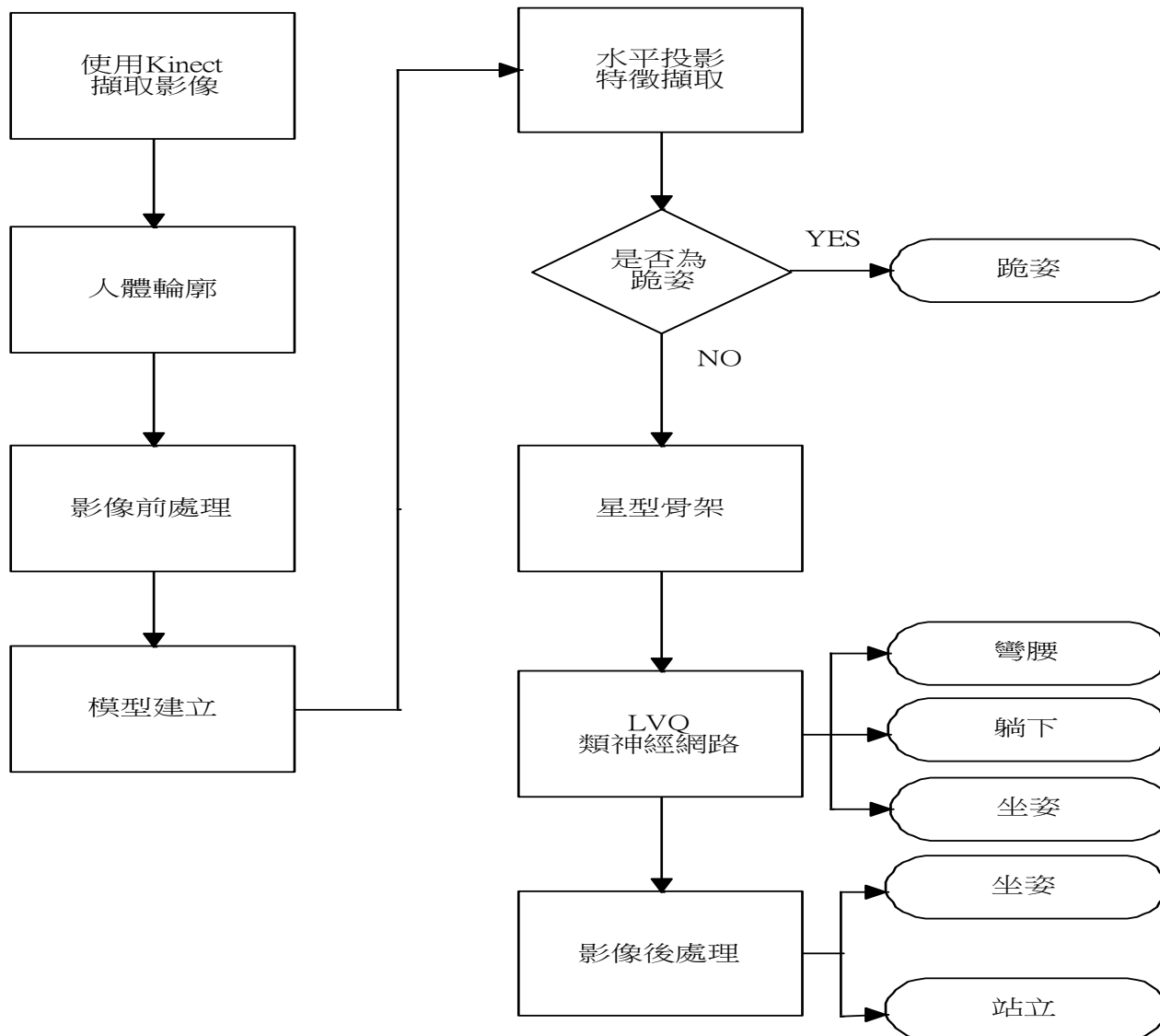
1098104353 黃柏輝

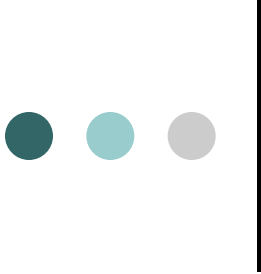


# Outline

- 流程圖介紹
- 製作進度概況
  - 蒐集資料
  - Kinect簡介
  - Kincet安裝
  - Kinect SDK實作

# 流程圖



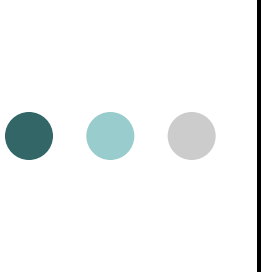


## 蒐集資料

- Kinect硬體原理、開發環境安裝、SDK的使用
- 關於辨識與Kinect技術、論文輪廓取得：背景相減法
- 演算法和程式碼

# Kinect 簡介





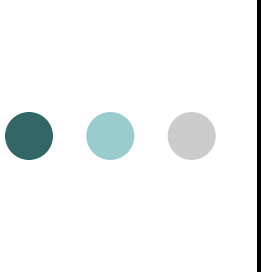
# Kinect 安裝

- 作業系統：Windows 7 (x86 / x64)
- 硬體：
  - CPU：雙核 2.66GHz 以上
  - RAM：2GB 以上
  - 顯示卡：支援 DirectX 9.0c 以上
  - Kinect 感應器
- 軟體：
  - Visual Studio 2010 (C#)
  - .NET Framework 4.0
  - Kinect SDK for Windows

## ● ● ● 安裝 Kinect For Windows SDK 步驟：

- 先不要接上 Kinect 感應器
- 不要開啓 Visual Studio 2010
- 依照 Windows 7 是 32 還是 64 位元，安裝對應的 Kinect SDK
- 安裝完畢後請務必要重新開機，以便系統可以正確識別 SDK 所需要的環境變數

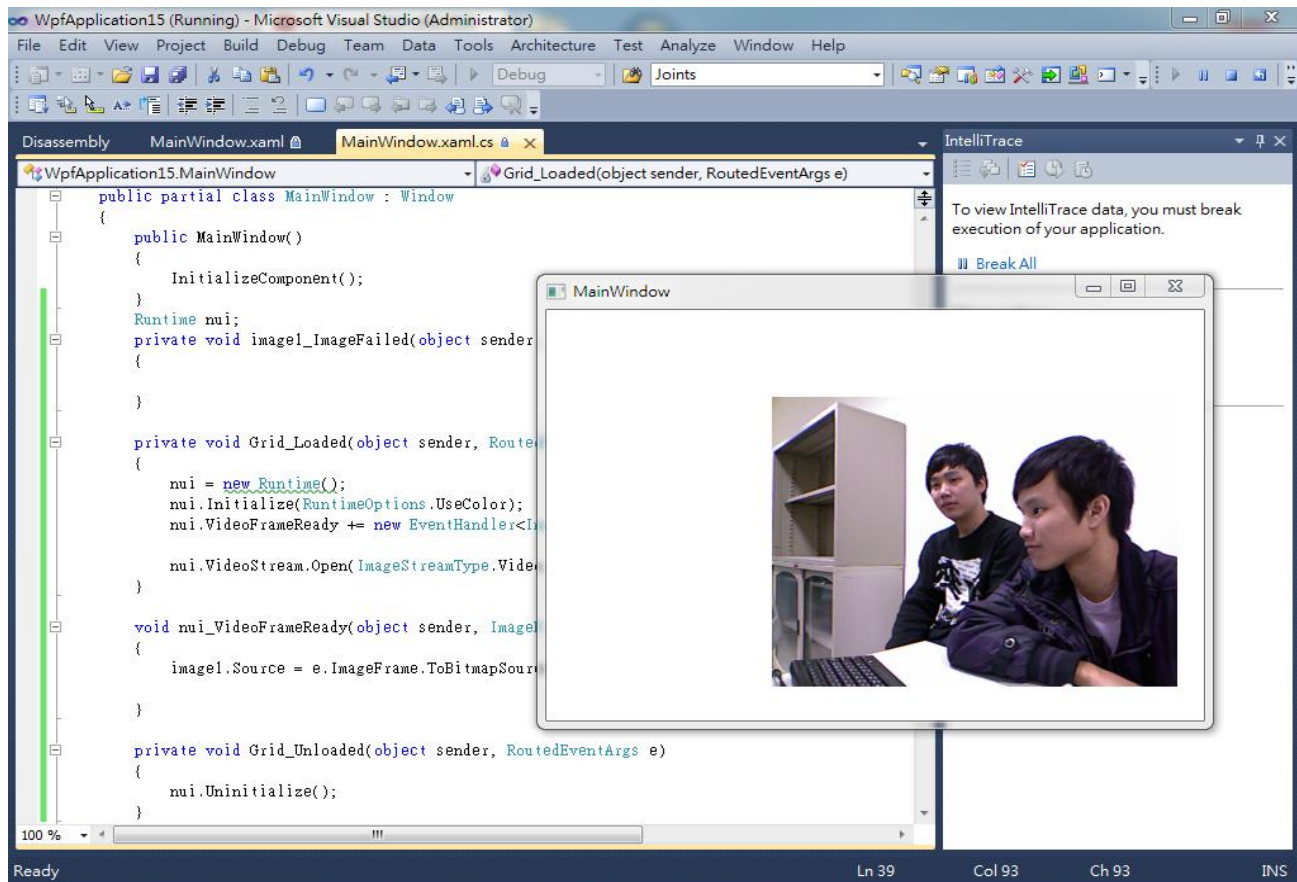




## 安裝Coding4Fun Kinect Toolkit：

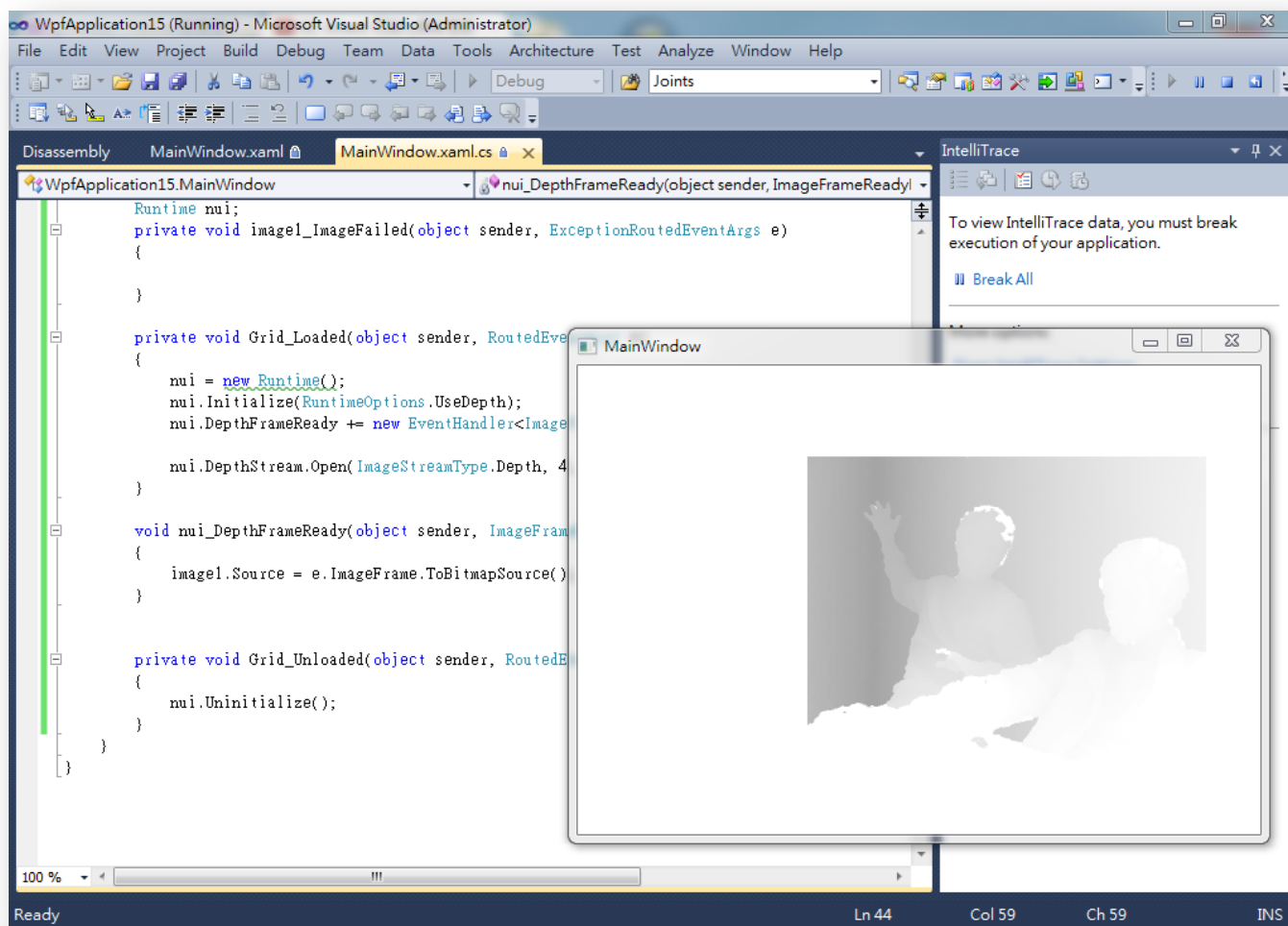
- Toolkit 中包含的函式庫：
  - Coding4Fun.Kinect.Wpf.dll (WPF 應用程式)
  - Coding4Fun.Kinect.WinForms.dll (WinForm 應用程式)
  - Microsoft.Expression.Drawing.dll

# Kinect SDK實作(1)



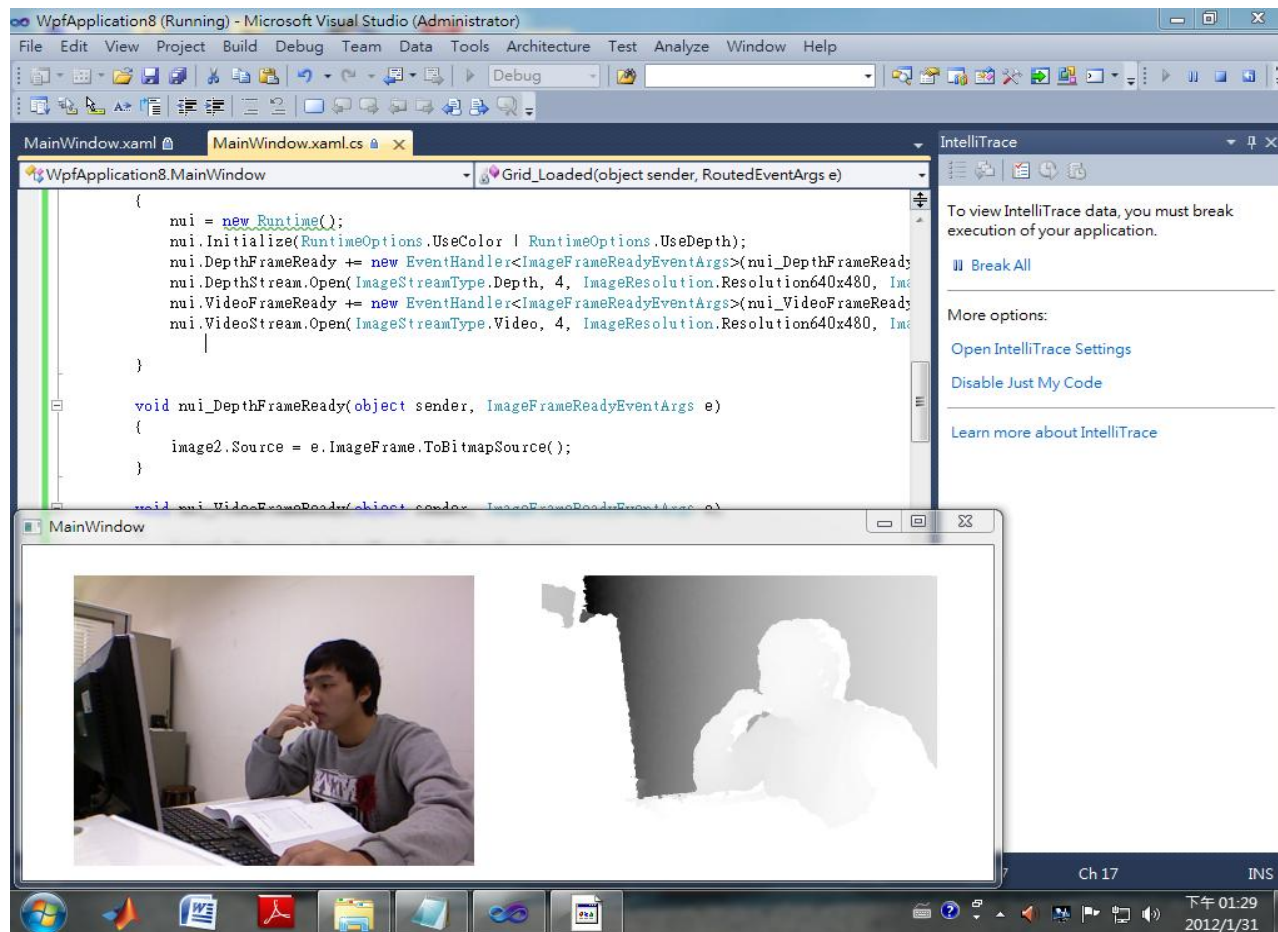
彩色資訊

# Kinect SDK實作(2)



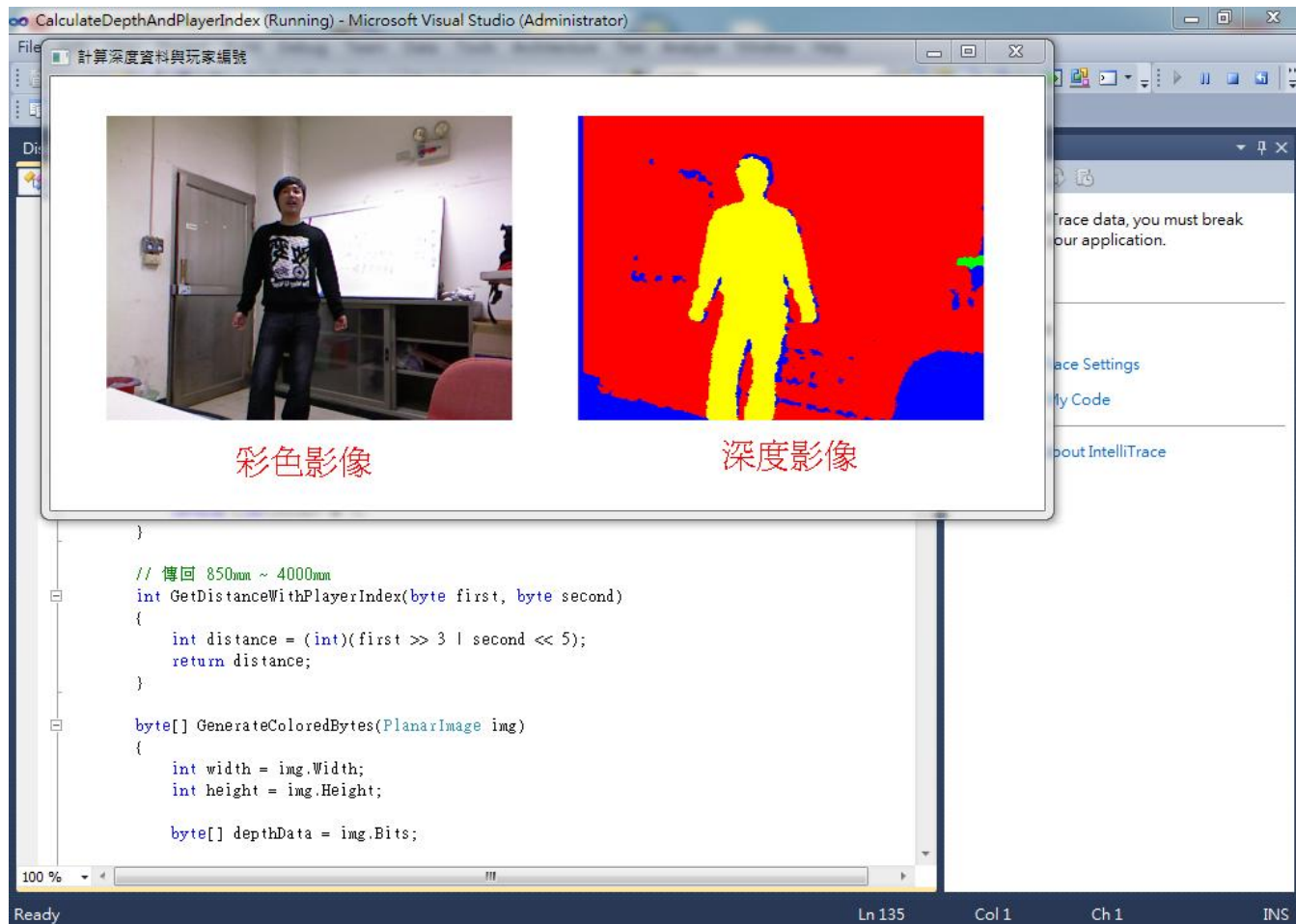
深度資訊

# Kinect SDK實作(3)



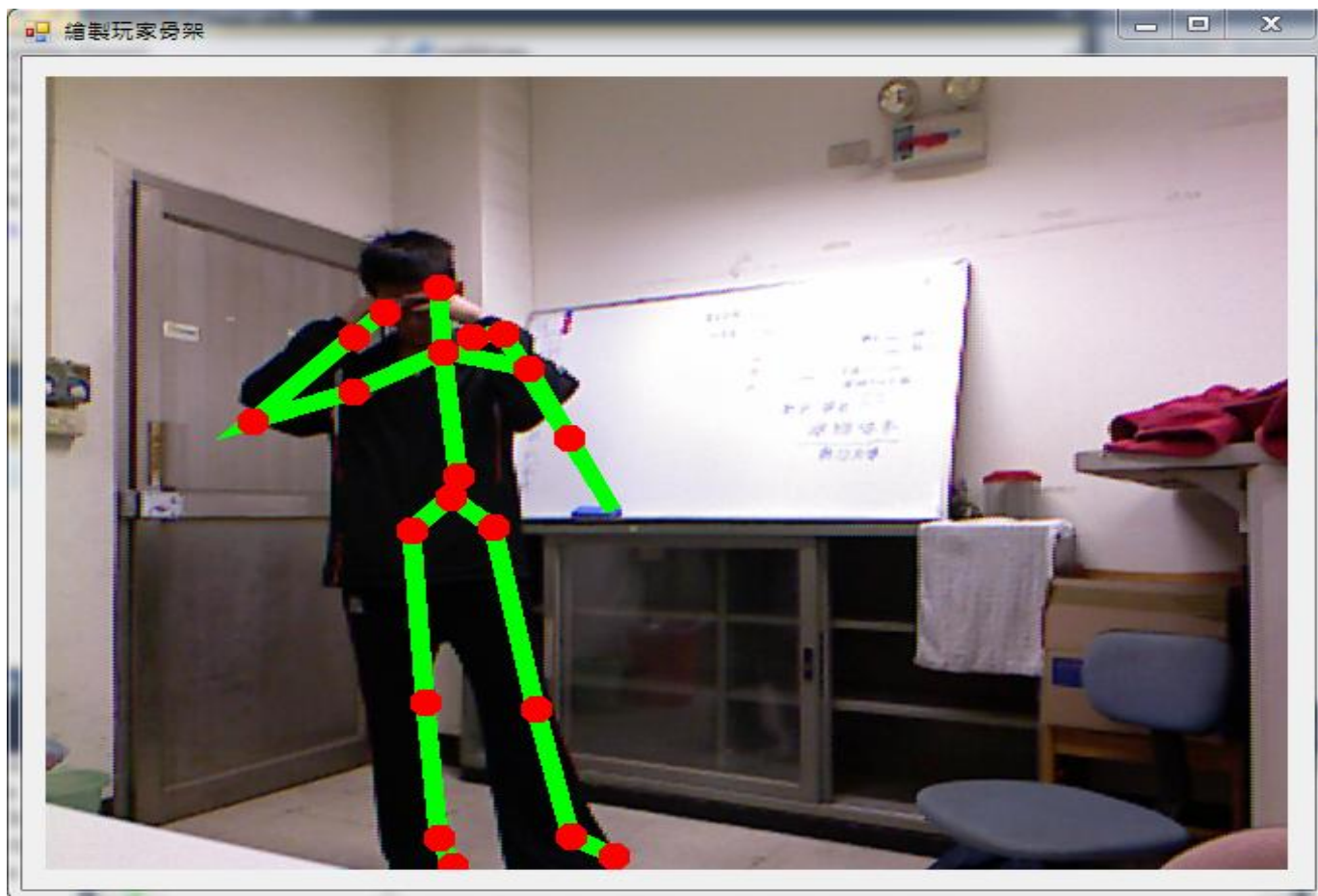
彩色與深度資訊

# Kinect SDK實作(4)



彩色與深度資訊

# Kinect SDK實作(5)



玩家骨架

# Kinect SDK實作(6)

取得關節3D座標資訊



HipCenter = 133, 128  
Spine = 133, 121  
ShoulderCenter = 133, 80  
Head = 136, 59  
ShoulderLeft = 113, 93  
ElbowLeft = 102, 124  
WristLeft = 101, 151  
HandLeft = 103, 158  
ShoulderRight = 154, 93  
ElbowRight = 160, 124  
WristRight = 161, 150  
HandRight = 159, 154  
HipLeft = 124, 137  
KneeLeft = 121, 192  
AnkleLeft = 121, 230  
FootLeft = 120, 240  
HipRight = 143, 137  
KneeRight = 145, 191  
AnkleRight = 145, 229  
FootRight = 145, 239

座標資訊

# Kinect SDK實作(7)

取得關節 3D 座標資料



HipCenter = 134, 120  
Spine = 133, 113  
ShoulderCenter = 133, 76  
Head = 134, 54  
ShoulderLeft = 114, 88  
ElbowLeft = 106, 116  
WristLeft = 107, 140  
HandLeft = 105, 143  
ShoulderRight = 151, 87  
ElbowRight = 158, 114  
WristRight = 160, 136  
HandRight = 159, 145  
HipLeft = 126, 128  
KneeLeft = 124, 178  
AnkleLeft = 126, 216  
FootLeft = 121, 224  
HipRight = 142, 128  
KneeRight = 144, 178  
AnkleRight = 140, 216  
FootRight = 145, 223

座標資訊

# Kinect SDK實作(8)

取得關節 3D 座標資料

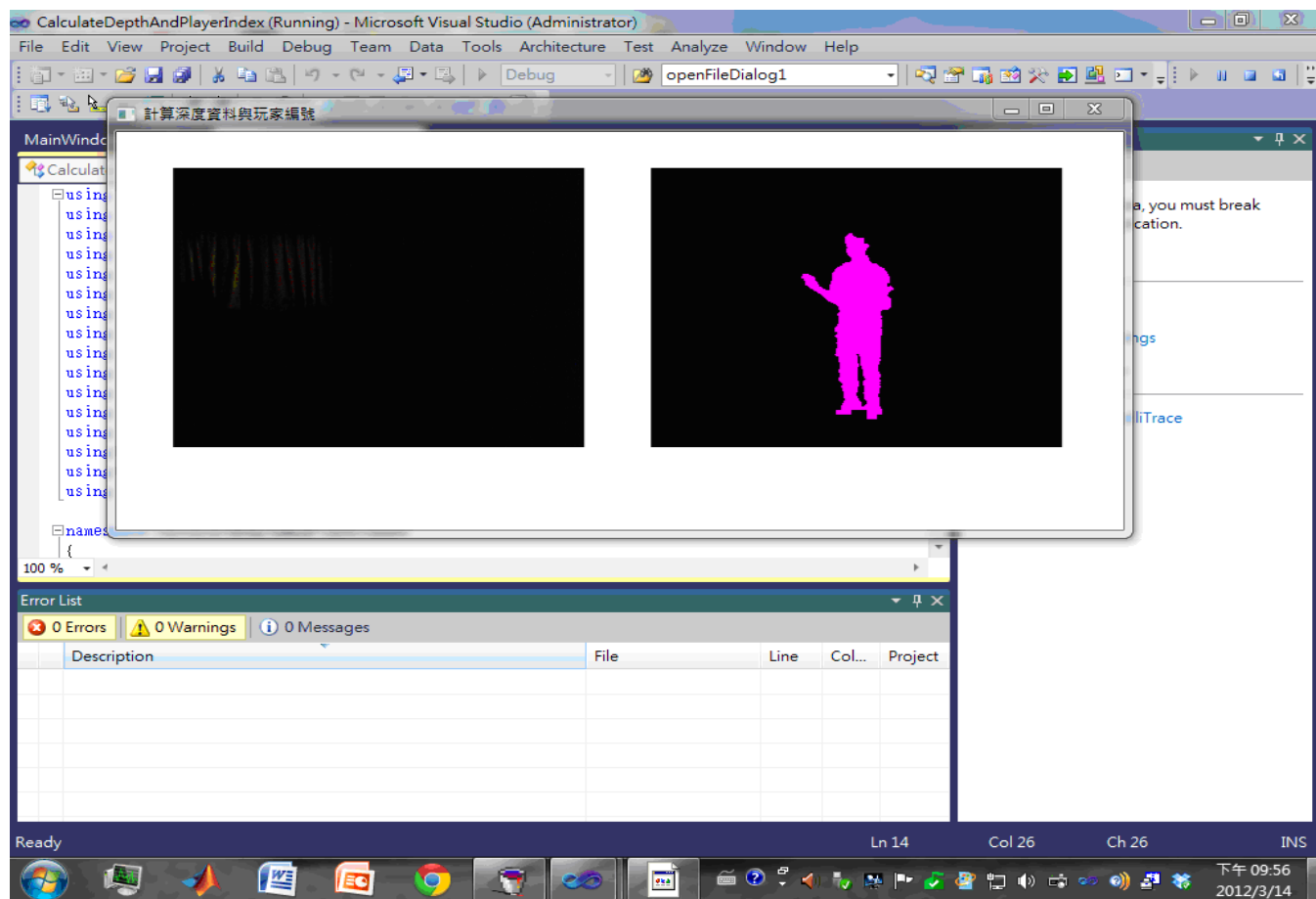


HipCenter = 137, 105  
Spine = 136, 100  
ShoulderCenter = 131, 74  
Head = 133, 52  
ShoulderLeft = 112, 87  
ElbowLeft = 106, 118  
WristLeft = 106, 141  
HandLeft = 107, 151  
ShoulderRight = 151, 71  
ElbowRight = 158, 47  
WristRight = 159, 24  
HandRight = 162, 21  
HipLeft = 130, 116  
KneeLeft = 124, 172  
AnkleLeft = 126, 216  
FootLeft = 121, 223  
HipRight = 148, 114  
KneeRight = 145, 170  
AnkleRight = 140, 216  
FootRight = 146, 223

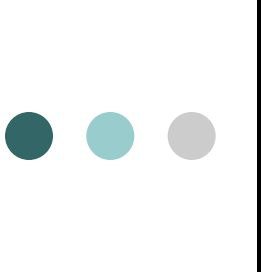
座標資訊



# Kinect SDK實作(10)

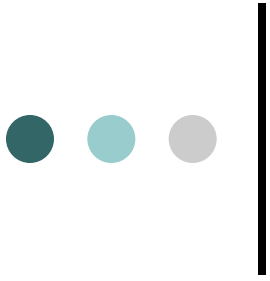


無光源下的人體輪廓



## 背景相減法

- Frame Differencing (連續影像相減法)
- Static Background Subtraction(靜態影像相減法)



The End

Thanks for your listening