

# Computer sciences

Smart skills  
(Hardware management & network applications)

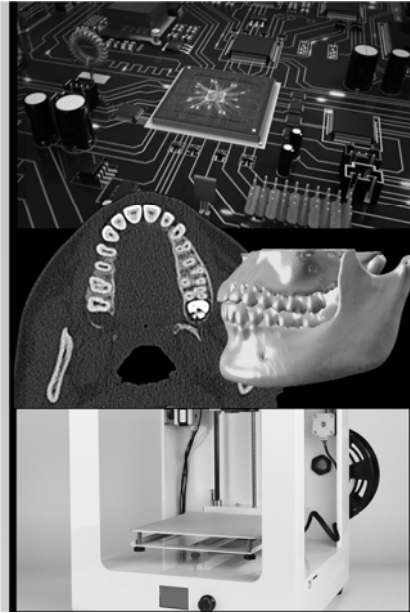
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# Smart Skills

- Hardware information: Windows device manager, CPU-Z
- Disk management: disk partition/format, de-fragmentation
- Graphics card management: GPU-Z, driver update
- Performance monitoring: Task manager, resource monitor
- Remote desktop/control: remote desktop connection (fixed IP), chrome remote desktop

Course video and handouts  
[http://cflu.lab.nycu.edu.tw/CFLu\\_course\\_CompSci.html](http://cflu.lab.nycu.edu.tw/CFLu_course_CompSci.html)

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# Hardware Information

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# 裝置管理員



# Windows device manager

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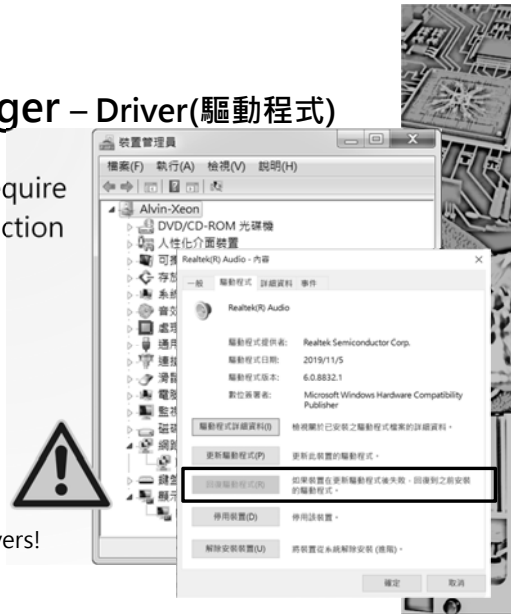
## Windows Device Manager – Driver(驅動程式)

• All connected hardware devices require a set of working commands to function (software ⇔ hardware).

- Keyboard, Mouse
- Screens
- Printers
- Graphic cards
- Webcam

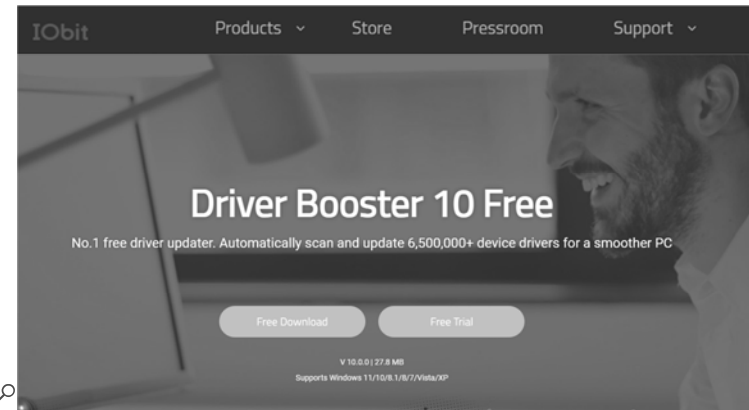
Install correct and up-to-date device drivers!

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## Driver Booster (Keep Drivers Up-to-date)

<https://www.iobit.com/en/driver-booster.php>



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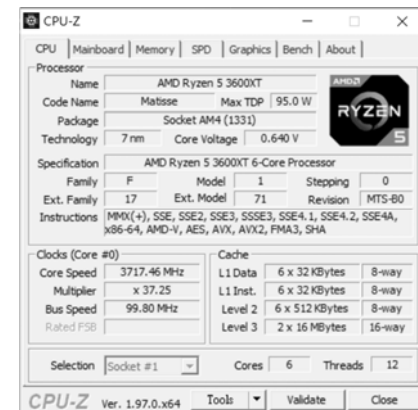
## SPECIFICATION OF CPU

Download **CPU-Z** from

<http://www.cpuid.com/softwares/cpu-z.html>

- 型號 Name
- 運作頻率/時脈 Clock
- 核心代號 Code Name
- 封裝 Package
- 快取記憶體 Cache Memory
- 核心數 Cores
- 執行緒數 Threads
- 製程 Technology
- 內建繪圖核心 Graphics core
- 最高功耗 Max TDP

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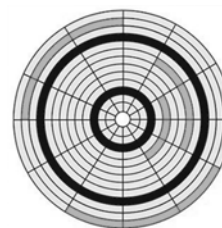
# Disk Management

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# Disk and File Management

- Increase the performance of the operating system in managing and accessing files.



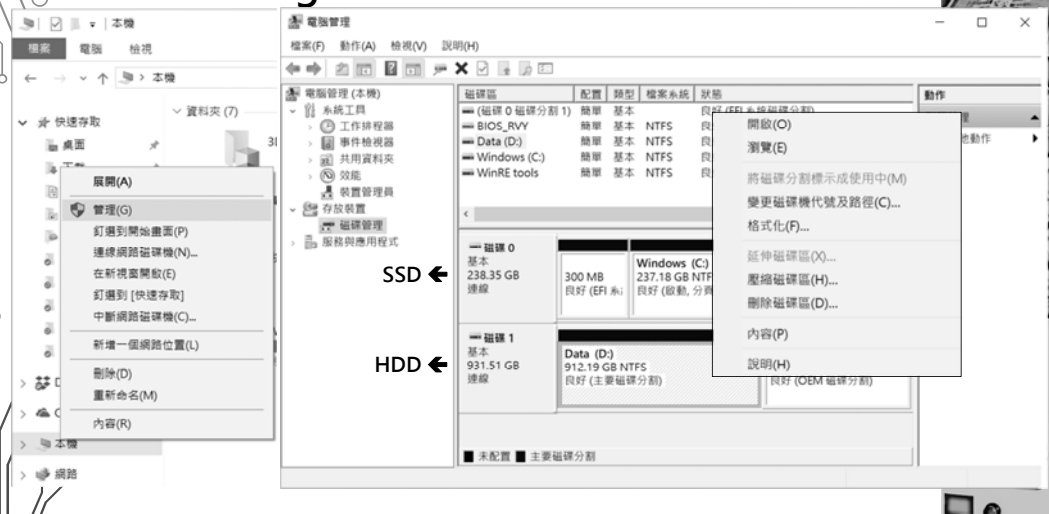
tracks  
sectors  
clusters

The same file data may be stored in discontinuous sectors.

Tools	Functions
檔案管理員	Display file lists and folders; copy, name, move, delete, and sort files.
程式集 (解除安裝程式)	Remove a specific program and its associated items
磁碟分割	Create or delete partitions of disk for file storage
磁碟清理	Search and remove unwanted files
磁碟重組	Reorganize files and unused space to access data more quickly
備份和還原	Copy the contents of the storage media to other storage locations

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# Disk Management



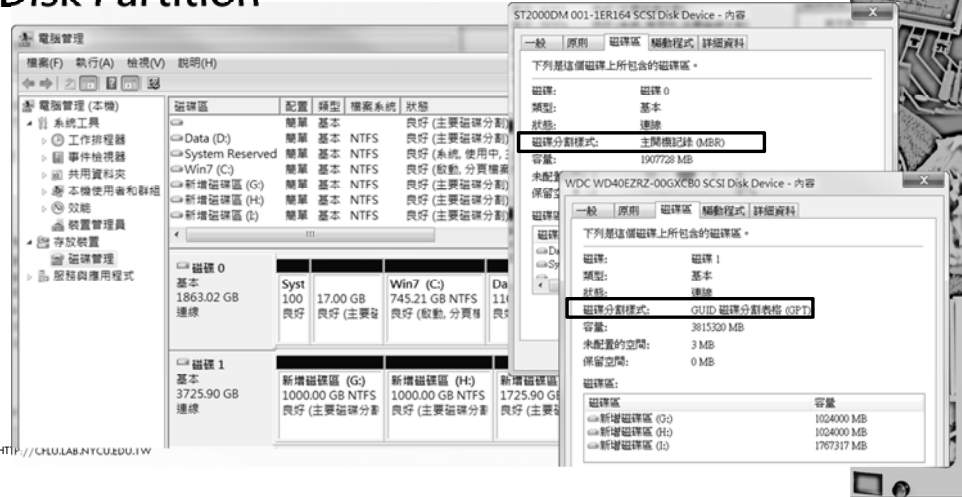
# Disk Partition



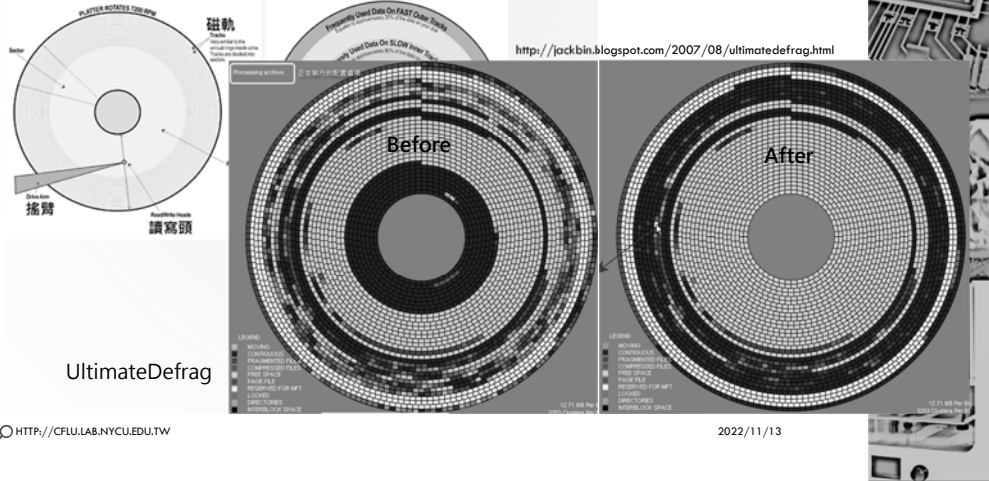
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- Conventional partition, MBR, only support hard drive with 2TB
- Use GPT partition for a larger capacity hard drive.

## Disk Partition

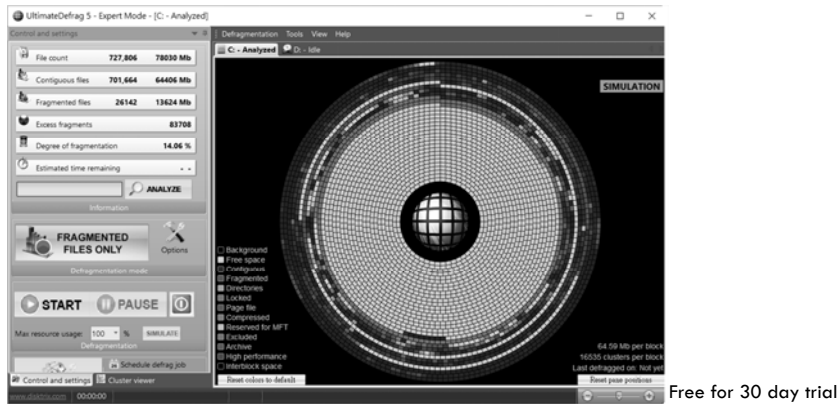


## Disk Defragmenter - Increase Data Access Performance



## ULTIMATEDEGRAG 6

<http://www.disktrix.com/index.php>



Free for 30 day trial

## WINDOWS 10



分散 > 10% 以上建議進行最佳化

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## Should I Defrag My SSD?

- The short answer is this: you don't have to defrag an SSD.
- Mechanical drives have a relatively long seek time of approximately 15ms, so every time a file is fragmented you lose 15ms finding the next one.
- However, this isn't an issue with SSDs because the seek time are about 0.1ms. There is no performance advantage to defragging an SSD.
- At best it won't do anything, at worst it does nothing for your performance and you will use up write cycles of SSD.

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## Graphics Card Management

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## Graphics Card Drivers

- Recommend to keep up-to-date drivers
- Windows updates may cause incompatible driver issues
- NVIDIA GEFORCE Experience
- GPU-Z <http://www.techpowerup.com/gpuz>

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**NVIDIA**

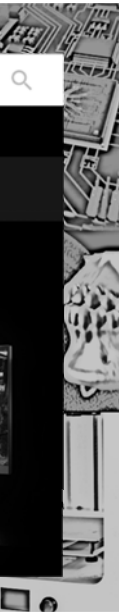
**GEFORCE**

Overview

**GEFORCE EXPERIENCE™**

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TechPowerUp GPU-Z 2.14.0

Graphics Card: Intel(R) UHD Graphics 630

Name: Intel(R) UHD Graphics 630

GPU: Coffee Lake GT2

Technology: 14 nm

Release Date: Oct 5, 2017

Subvendor: MSI

ROPs/TMUs: 8 / 16

Shaders: 24 Unified

Pixel Fillrate: 8.8 GPixel/s

Memory Type: DDR4

Memory Size: N/A

Driver Version: 23.20.16.4939 / Win10 64

Driver Date: Jan 29, 2018

GPU Clock: 350 MHz

Default Clock: 350 MHz

Multi-GPU: Disabled

Computing:  OpenCL  CUDA  PhysX  DirectCompute 5.0

TechPowerUp GPU-Z 2.14.0

Sensors:

- GPU Core Clock: 1050.0 MHz
- GPU Memory Clock: 1200.0 MHz
- GPU Temperature: 47.0 °C
- GPU Power: 0.2 W
- GPU Load: --%
- Memory Usage (Dedicated): 215 MB
- CPU Temperature: 47.0 °C
- System Memory Used: 8430 MB

Log to file:

TechPowerUp GPU-Z 2.14.0

Graphics Card: NVIDIA GeForce GTX 1060

Name: NVIDIA GeForce GTX 1060

GPU: GP106

Technology: 16 nm

Release Date: Aug 16, 2016

Subvendor: MSI

ROPs/TMUs: 48 / 80

Shaders: 1280 Unified

Pixel Fillrate: 83.2 GPixel/s

Memory Type: GDDR5 (Samsung)

Memory Size: 6144 MB

Driver Version: 24.21.13.9901 (NVIDIA 399.01) / Win10 64

Driver Date: Aug 13, 2018

GPU Clock: 1455 MHz

Default Clock: 1455 MHz

NVIDIA SLI: Disabled

Computing:  OpenCL  CUDA  PhysX  DirectCompute 5.0

TechPowerUp GPU-Z 2.14.0

Sensors:

- GPU Core Clock: 139.0 MHz
- GPU Memory Clock: 202.5 MHz
- GPU Temperature: 45.0 °C
- GPU Load: 2%
- Memory Controller Load: 0%
- Video Engine Load: 0%
- Bus Interface Load: 1%
- Memory Usage (Dedicated): 4 MB
- Memory Usage (Dynamic): 0 MB
- PerfCap Reason: Idle
- VDDC: 0.5870 V
- CPU Temperature: 53.0 °C
- System Memory Used: 8471 MB

Log to file:

## Performance Monitoring

## Program Management & Coordination

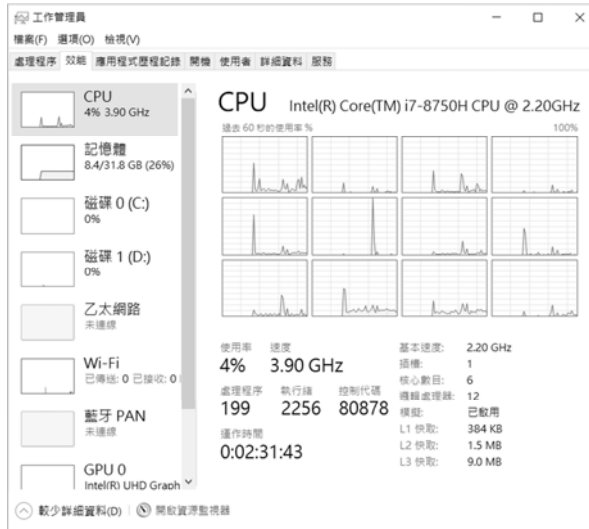
- Multi-tasking OS
- Foreground programs
  - Currently used
- Background programs
  - Partially or fully hidden
- Background processes

Task Manager

Task Manager

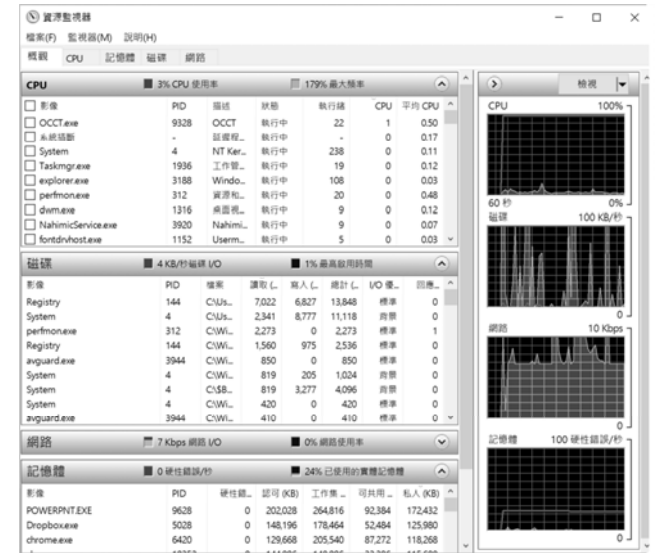
Name	Status	16% CPU	29% Memory	49% Disk	0% Network
<b>Apps (3)</b>					
Internet Explorer		0.7%	24.4 MB	0.2 MB/s	0 MBps
Task Manager		0%	11.3 MB	0 MB/s	0 MBps
Windows Explorer		0.4%	22.0 MB	0 MB/s	0 MBps
<b>Background processes (17)</b>					
Classic Shell Service (32 bit)		0%	0.6 MB	0 MB/s	0 MBps
COM Surrogate		0%	0.8 MB	0 MB/s	0 MBps
Communications Service		0%	3.5 MB	0 MB/s	0 MBps
Device Association Framework Provid...		0%	3.1 MB	0 MB/s	0 MBps
Host Process for Windows Tasks		0%	7.5 MB	0.1 MB/s	0 MBps
Microsoft Windows Search Filter Host		0%	0.8 MB	0 MB/s	0 MBps
Microsoft Windows Search Indexer		6.3%	20.0 MB	0.7 MB/s	0 MBps
Microsoft Windows Search Protocol ...		2.1%	1.7 MB	0.1 MB/s	0 MBps

# Performance Monitoring



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# Resource Monitor



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# Remote Desktop/Control

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# Chrome Remote Desktop

• <https://remotedesktop.google.com/>



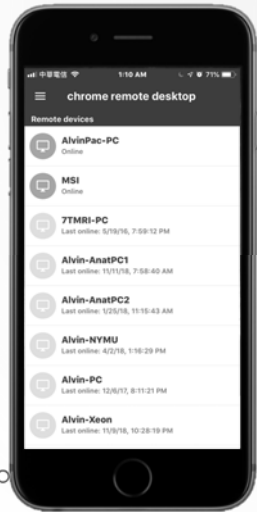
Chrome 遠端桌面



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# CHROME遠端桌面 Mobile Phone App



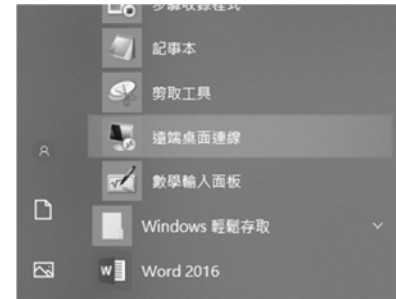
Connecting your PC using mobile phone!



Chrome 遠端桌面

# Windows Remote Desktop Connection 遠端桌面連線

- 附屬應用程式 → 遠端桌面連線



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