

OPERATING SYSTEMS & PARALLEL COMPUTING

Windows Examples

Task Manager

Task Manager

File Options View

Processes Performance App history Startup Users Details Services

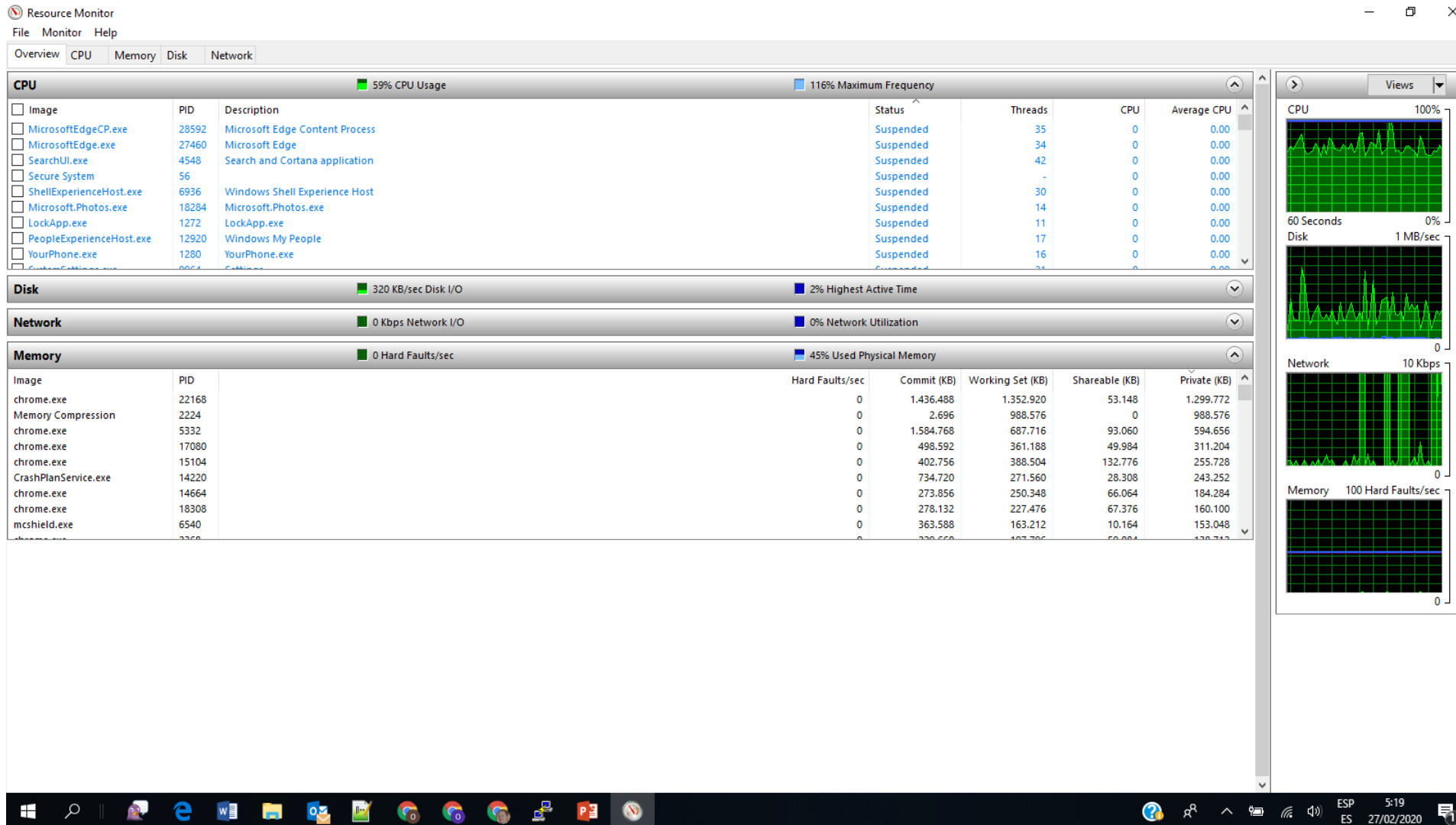
Name	Status	67% CPU	46% Memory	2% Disk	0% Network	2% GPU	GPU engine	Power usage	Power usage t...
Apps (13)									
> Windows Explorer		2,8%	68,8 MB	0 MB/s	0 Mbps	0%		Low	
> Task Manager		4,6%	39,9 MB	0 MB/s	0 Mbps	0%		Low	
> SSH, Telnet and Rlogin client (3...		0%	0,4 MB	0 MB/s	0 Mbps	0%		Very low	
> SSH, Telnet and Rlogin client (3...		0%	0,5 MB	0 MB/s	0 Mbps	0%		Very low	
> SSH, Telnet and Rlogin client (3...		0%	0,5 MB	0 MB/s	0 Mbps	0%		Very low	
> SSH, Telnet and Rlogin client (3...		0%	0,5 MB	0 MB/s	0 Mbps	0%		Very low	
> SSH, Telnet and Rlogin client (3...		0%	0,4 MB	0 MB/s	0 Mbps	0%		Very low	
> Resource and Performance Mo...		3,1%	57,1 MB	0,1 MB/s	0 Mbps	0%		Low	
> Notepad++ : a free (GNU) sourc...		0%	0,8 MB	0 MB/s	0 Mbps	0%		Very low	
> Microsoft Word (32 bit) (3)		0%	14,4 MB	0 MB/s	0 Mbps	0%		Very low	
> Microsoft PowerPoint (32 bit) (2)		0%	101,5 MB	0 MB/s	0 Mbps	0%	GPU 0 - 3D	Very low	
> Microsoft Outlook (32 bit)		0,5%	66,1 MB	0,1 MB/s	0 Mbps	0,1%	GPU 0 - 3D	Very low	
> Google Chrome (114)		12,9%	4.898,2 MB	0 MB/s	0 Mbps	0,8%	GPU 0 - 3D	Moderate	
Background processes (120)									
WMI Provider Host		0%	32,8 MB	0 MB/s	0 Mbps	0%		Very low	
WMI Provider Host		0%	35,9 MB	0 MB/s	0 Mbps	0%		Very low	
Windows Wireless LAN 802.11 E...		0%	0,5 MB	0 MB/s	0 Mbps	0%		Very low	
> Windows Shell Experience Host	🟢	0%	0 MB	0 MB/s	0 Mbps	0%	GPU 0 - 3D	Very low	
Windows Security notification i...		0%	0,2 MB	0 MB/s	0 Mbps	0%		Very low	
> Windows Security Health Service		0%	2,3 MB	0 MB/s	0 Mbps	0%		Very low	
> Windows My People	🟢	0%	0 MB	0 MB/s	0 Mbps	0%		Very low	
Windows Driver Foundation - U...		0%	0,8 MB	0 MB/s	0 Mbps	0%		Very low	
Windows Defender SmartScreen		0%	4,8 MB	0 MB/s	0 Mbps	0%		Very low	

^ Fewer details

End task

Windows taskbar: 5:20 27/02/2020

Execute Process Command: resmon



PSTools Suite

- <https://docs.microsoft.com/en-us/sysinternals/downloads/pstools>

Process Monitor

- <https://docs.microsoft.com/en-us/sysinternals/downloads/procmon>

ProcessExplorer

- <https://docs.microsoft.com/en-us/sysinternals/downloads/process-explorer>

Check Threads

Process Explorer - Sysinternals: www.sysinternals.com [OPERARD-ES\operard]

File Options View Process Find Users Help

Process Explorer - Sysinternals: www.sysinternals.com [OPERARD-ES\operard]

Process	CPU	Private Bytes	Working Set	PID	Description	Company Name
svchost.exe		2.632 K	9.924 K	11308	Host Process for Windows S...	Microsoft Corporation
svchost.exe		6.260 K	8.972 K	17800	Host Process for Windows S...	Microsoft Corporation
svchost.exe		1.776 K	7.260 K	3632	Host Process for Windows S...	Microsoft Corporation
svchost.exe		2.692 K	6.712 K	21516	Host Process for Windows S...	Microsoft Corporation
svchost.exe	0.03	5.656 K	17.164 K	19772	Host Process for Windows S...	Microsoft Corporation
svchost.exe		2.436 K	8.412 K	23452	Host Process for Windows S...	Microsoft Corporation
svchost.exe		1.388 K	4.944 K	24392	Host Process for Windows S...	Microsoft Corporation
svchost.exe		2.332 K	9.124 K	22364	Host Process for Windows S...	Microsoft Corporation
svchost.exe		2.936 K	7.568 K	20452	Host Process for Windows S...	Microsoft Corporation
lsass.exe		1.316 K	2.940 K	1004	Local Security Authority Proc...	Microsoft Corporation
fontdrvhost.exe		6.292 K	4.476 K	828	Font Driver Host Process	Microsoft Corporation
csrss.exe	0.18	2.452 K	5.736 K	844	Client Server Runtime Process	Microsoft Corporation
winlogon.exe	< 0.01	3.628 K	14.792 K	944	Windows Logon Process	Microsoft Corporation
fontdrvhost.exe		18.988 K	21.400 K	748	Font Driver Host Process	Microsoft Corporation
dwm.exe	1.58	88.252 K	78.688 K	1284	Desktop Window Manager	Microsoft Corporation
explorer.exe	2.79	202.600 K	222.756 K	13700	Windows Explorer	Microsoft Corporation
SecurityHealthSystray.exe		1.884 K	9.228 K	14956	Windows Security notificatio...	Microsoft Corporation
CrashPlanDesktop.exe	< 0.01	28.976 K	53.684 K	6260	Code42 CrashPlan	Code42, Inc.
CrashPlanDesktop.exe		19.688 K	20.140 K	7608	Code42 CrashPlan	Code42, Inc.
CrashPlanDesktop.exe	0.04	60.800 K	52.648 K	16472	Code42 CrashPlan	Code42, Inc.
EpePcMonitor.exe	< 0.01	1.440 K	4.532 K	15388	McAfee Drive Encryption Mo...	McAfee, Inc.
Toast32.exe		1.300 K	4.320 K	15444	McAfee Data Protection Noti...	McAfee, Inc.
TecoResident.exe	0.03	2.516 K	11.908 K	15652	Resident module of eco Utility	TOSHIBA
TCrdMain.exe		28.040 K	31.604 K	16192	TOSHIBA Flash Cards Main	TOSHIBA
TCrdKBB.exe		1.268 K	6.176 K	15712	TCrdKBB Application	TOSHIBA
TDUSrv64.exe		1.468 K	6.924 K	16076	TOSHIBA Display Utility Serv...	TOSHIBA
TPwrMain.exe		3.292 K	11.432 K	15844	TOSHIBA Power Saver	TOSHIBA
RAVCpl64.exe		4.784 K	13.068 K	16328	Realtek HD Audio Manager	Realtek Semiconductor Corp.
ScanToPCActivationApp.exe		3.316 K	14.828 K	15600	ScanToPCActivationApp	Hewlett-Packard Development Company, L.P.
ScanToPCActivationApp.exe	< 0.01	5.020 K	17.784 K	15764	ScanToPCActivationApp	Hewlett-Packard Development Company, L.P.
DesktopScreenShare.exe		2.844 K	11.404 K	13088	DesktopScreenShare.exe	Microsoft Corporation
ONENOTEM.EXE		1.632 K	3.592 K	9652	Send to OneNote Tool	Microsoft Corporation
OUTLOOK.EXE	0.63	264.876 K	225.772 K	8488	Microsoft Outlook	Microsoft Corporation
notepad++.exe	0.04	25.504 K	21.220 K	4032	Notepad++ : a free (GNU) so...	Notepad++
WINWORD.EXE	0.07	68.220 K	93.116 K	3252	Microsoft Word	Microsoft Corporation
PUTTY.EXE	< 0.01	4.796 K	16.352 K	2128	SSH, Telnet and Rlogin client	Simon Tatham
PUTTY.EXE	0.01	4.704 K	13.720 K	4768	SSH, Telnet and Rlogin client	Simon Tatham
PUTTY.EXE	< 0.01	3.688 K	17.636 K	22896	SSH, Telnet and Rlogin client	Simon Tatham
PUTTY.EXE	< 0.01	2.572 K	15.544 K	17424	SSH, Telnet and Rlogin client	Simon Tatham
PUTTY.EXE	< 0.01	3.932 K	17.468 K	18216	SSH, Telnet and Rlogin client	Simon Tatham
POWERPNT.EXE	0.31	378.680 K	223.500 K	22992	Microsoft PowerPoint	Microsoft Corporation
splwow64.exe		9.912 K	17.896 K	6192	Print driver host for applica...	Microsoft Corporation
taskmgr.exe	5.95	45.620 K	77.436 K	20392	Task Manager	Microsoft Corporation
procexp.exe		3.604 K	10.700 K	8180	Sysinternals Process Explorer	Sysinternals - www.sysinter...
procexp64.exe	9.13	31.160 K	50.748 K	4080	Sysinternals Process Explorer	Sysinternals - www.sysinter...
Alps.Exe		2.080 K	8.564 K	13720	Alps Pointing-device Driver f...	Alps Electric Co., Ltd.

CPU Usage: 64.67% Commit Charge: 53.96% Processes: 361 Physical Usage: 47.34%

WINWORD.EXE:3252 Properties

Security Environment .NET Assemblies .NET Performance Strings
Image Performance Performance Graph GPU Graph Threads TCP/IP

Count: 29

TID	CPU	Cycles Delta	Start Address
17152	0.05	6.024.252	WINWORD.EXE+0x10d4
12732	< 0.01	441.386	EpMPApi.dll!exp_DetachHandlers+0...
25132	< 0.01	126.572	ntdll.dll!RtlAcquirePebLock+0x5f0
10252			mso.dll!Ordinal9267+0x25e
14132			mso.dll!_MsoFinitOffice@20+0x1d
1300			mso.dll!Ordinal1981+0x1001
17984			mso.dll!Ordinal3004+0x2af
21680			mso.dll!Ordinal1981+0x1001
19056			mso.dll!Ordinal7857+0x42d
10032			mso.dll!Ordinal1981+0x1001
17924			mso.dll!Ordinal1981+0x1001
12488			ntdll.dll!RtlAcquirePebLock+0x5f0

Thread ID: 17152 Stack Module

Start Time: 15:27:56 24/02/2020

State: Wait:UserRequest Base Priority: 8

Kernel Time: 0:00:18.812 Dynamic Priority: 10

User Time: 0:00:15.734 I/O Priority: Normal

Context Switches: 4,493,195 Memory Priority: 5

Cycles: 690,796,905,098 Ideal Processor: 2

Permissions Kill Suspend

OK Cancel

Examples Thread & Processes with Python

- Test test_thread.py
- Test test_thread2.py
- Test test_process1.py
- Test test_process2.py

- Which conclusions ?

Monitoring Example: cluster_analysis.py

Task Manager							
File Options View							
Processes Performance App history Startup Users Details Services							
Name	Status	99% CPU	49% Memory	1% Disk	0% Network	0% GPU	GPU engine
python.exe (3)		32,4%	590,3 MB	0 MB/s	0 Mbps	0%	
pythonw.exe		32,4%	531,7 MB	0 MB/s	0 Mbps	0%	
Spyder (Python 2.7)		0%	55,9 MB	0 MB/s	0 Mbps	0%	
python.exe		0%	2,7 MB	0 MB/s	0 Mbps	0%	
Host Process for Windows Tasks		27,3%	8,9 MB	0,1 MB/s	0 Mbps	0%	
Google Chrome (121)		18,3%	4.041,4 MB	0,1 MB/s	0 Mbps	0,3%	GPU 0 - 3D
System		5,0%	0,1 MB	0,1 MB/s	0 Mbps	0%	
Task Manager		3,7%	26,7 MB	0 MB/s	0 Mbps	0%	
RAMPMulticastPlusReceiverSer...		2,9%	54,8 MB	0 MB/s	0 Mbps	0%	
McAfee Active Response Client.		2,9%	63,4 MB	0,2 MB/s	0 Mbps	0%	
Windows Explorer (4)		2,6%	266,8 MB	0 MB/s	0 Mbps	0%	
Desktop Window Manager		2,1%	49,4 MB	0 MB/s	0 Mbps	0,1%	GPU 0 - 3D
McAfee Scanner service		0,6%	156,0 MB	0 MB/s	0 Mbps	0%	
Microsoft Outlook (32 bit)		0,3%	57,1 MB	0 MB/s	0 Mbps	0,1%	GPU 0 - 3D
Firefox (32 bit)		0,3%	17,9 MB	0 MB/s	0 Mbps	0%	

< >
 End task

Example: cluster_analysis.py

Spyder (Python 2.7)

Archivo Editar Buscar Código fuente Ejecutar Depurar Terminales Proyectos Herramientas Ver Ayuda

Editor - C:\tools\ie_test\cluster_analysis.py

```
46 # Clean Data
47 df_pred = df_pred.fillna(df_pred.mean())
48 #df_pred.drop('screenviews', axis=1, inplace=True)
49 df_pred = df_pred.replace(np.nan,0)
50
51 df_pred.head()
52
53
54 # Function to iterate from k=2 until k=n with kmeans
55 def generate_kmeans(tabla_in,k,initialization,number_init, max_iterations,algoritmo):
56     lista_modelos=[]
57     lista_centroides=[]
58     lista_silhouette=[]
59     lista_inertia=[]
60     for i in range(2,k+1):
61         kmeans_i=KMeans(n_clusters=i, init=initialization, n_init=number_init, max_iter=max_iterations, tol=0.0001, precompute_distances=True)
62         kmedias_i=kmeans_i.fit(tabla_in)
63         lista_modelos.append(kmedias_i)
64         lista_centroides.append(kmedias_i.cluster_centers_)
65         lista_inertia.append(kmedias_i.inertia_)
66         #lista_silhouette.append(silhouette_score(tabla_in,kmedias_i.labels_))
67     return lista_modelos,lista_centroides,lista_silhouette,lista_inertia
68
69 # Code to scale all variables between 0 and 1
70 scaler = MinMaxScaler()
71 scaler.fit(df_pred[['numhits', 'numpageviews', 'totalTransactionRevenue', 'UniqueScreenViews', 'numevts']])
72 df_pred_esc=scaler.transform(df_pred[['numhits', 'numpageviews', 'totalTransactionRevenue', 'UniqueScreenViews', 'numevts']])
73 df_pred_esc = pd.DataFrame({'numhits': df_pred_esc[:, 0], 'numpageviews': df_pred_esc[:, 1], 'totalTransactionRevenue': df_pred_esc[:, 2], 'UniqueScreenViews': df_pred_esc[:, 3], 'numevts': df_pred_esc[:, 4]})
74
75 # Recursive kmeans call to determine the better k
76 init_time2 = datetime.datetime.now()
77 num_clusters=10
78 lista_modelos2,lista_centroides2,lista_silhouette2,lista_inertia2=generate_kmeans(tabla_in=df_pred_esc,k=num_clusters,initialization='k-means++',number_init=10,max_iterations=1000,algoritmo='k-means++')
79 end_time2 = datetime.datetime.now()
80 dif_time2=end_time2-init_time2
81
82 #print(dif_time2.seconds/60)#tiempo que tarda la ejecución en minutos
83
84 temp=dif_time2.seconds
85 hours = temp//3600
86 temp = temp - 3600*hours
87 minutes = temp//60
88 seconds = temp - 60*minutes
89 print('Execution Time: %d hour:%d min:%d sec' %(hours,minutes,seconds))
90
91 # visualize the intracluster variance
92 plt.figure(figsize=(10,8))
93 plt.plot(lista_inertia2)
```

Ayuda

Uso

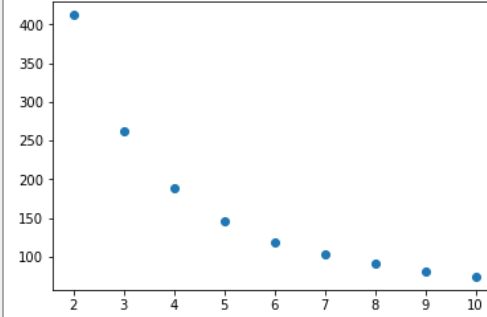
En este panel es posible obtener la ayuda de cualquier objeto al oprimir **Ctrl+I** estando al frente del mismo, bien sea en el Editor o en la Terminal.

Esta ayuda también se puede mostrar automáticamente después de escribir un paréntesis junto a un objeto. Este comportamiento puede activarse en *Preferencias > Ayuda*.

Explorador de variables Explorador de archivos Ayuda

Terminal de IPython

Terminal 1/A



In [8]:

Historial de comandos Terminal de IPython

Permisos: RW Fin de línea: CRLF Codificación: UTF-8 Línea: 17 Columna: 47 Memoria: 48 %

Windows taskbar icons: File Explorer, Edge, Word, PowerPoint, Excel, Outlook, Chrome, Firefox, VS Code, etc.

Execution in Windows

- `time python3 ./cluster_analysis.py`
- (500000, 33)
- Execution Time: 0 hour:2 min:59 sec

- real 3m8.175s
- user 3m53.725s
- sys 2m38.097s

