

# R語言 Keras及XGBoost套件CPU版本 安裝教學

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簡報製作：中山大學財管系 蘇彥庭 研究助理

2020/09/15

# 索引

- 安裝R及RStudio
- 安裝Anaconda (安裝Keras才需要 若只需要XGBoost不需要安裝)
- 安裝Keras CPU版本
- 安裝XGBoost CPU版本

# 安裝R及RStudio

Google

R

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約有 25,270,000,000 項結果 (搜尋時間：0.47 秒)

www.r-project.org ▾ 翻譯這個網頁

### The R Project for Statistical Computing

R is a free software environment for statistical computing and graphics. It compiles and runs on a wide variety of UNIX platforms, Windows and MacOS.

來自 r-project.org 的搜尋結果

<h4>Windows</h4> <p>R-4.0.2 for Windows (32/64 bit). Download R 4.0.2 for Windows ...</p>	<h4>CRAN</h4> <p>CRAN is a network of ftp and web servers around the world that ...</p>
<h4>Download R</h4> <p>Download and Install R. Precompiled binary ...</p>	<h4>R language</h4> <p>There are about eight packages supplied with the R distribution ...</p>

頁面直接連結：<https://www.r-project.org/>



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[Developer Pages](#)

[R Blog](#)

# The R Project for Statistical Computing

## Getting Started

R is a free software environment for statistical computing and graphics. It compiles and runs on a wide variety of UNIX platforms, Windows and MacOS. To [download R](#), please choose your preferred [CRAN mirror](#).

If you have questions about R like how to download and install the software, or what the license terms are, please read our [answers to frequently asked questions](#) before you send an email.

## News

- [R version 4.0.2 \(Taking Off Again\)](#) has been released on 2020-06-22.
- [useR! 2020 in Saint Louis has been cancelled](#). The European hub planned in Munich will not be an in-person conference. Both organizing committees are working on the best course of action.
- [R version 3.6.3 \(Holding the Windsock\)](#) has been released on 2020-02-29.
- You can support the R Foundation with a renewable subscription as a [supporting member](#)

## CRAN Mirrors

The Comprehensive R Archive Network is available at the following URLs, please choose a location close to you. Some statistics on the status of the mirrors can be found here: [main page](#), [windows release](#), [windows old release](#).

If you want to host a new mirror at your institution, please have a look at the [CRAN Mirror HOWTO](#).

0-Cloud

<https://cloud.r-project.org/>

Algeria

<https://cran.usthb.dz/>

Argentina

<http://mirror.fcaglp.unlp.edu.ar/CRAN/>

Australia

<https://cran.csiro.au/>

<https://mirror.aarnet.edu.au/pub/CRAN/>

<https://cran.ms.unimelb.edu.au/>

<https://cran.curtin.edu.au/>

Austria

<https://cran.wu.ac.at/>

Automatic redirection to servers worldwide, currently sponsored by Rstudio

University of Science and Technology Houari Boumediene

Universidad Nacional de La Plata

CSIRO

AARNET

School of Mathematics and Statistics, University of Melbourne

Curtin University

Wirtschaftsuniversität Wien

## The Comprehensive R Archive Network

### Download and Install R

Precompiled binary distributions of the base system and contributed packages, **Windows and Mac** users most likely want one of these versions of R:

- [Download R for Linux](#)
- [Download R for \(Mac\) OS X](#)
- [Download R for Windows](#)

R is part of many Linux distributions, you should check with your Linux package management system in addition to the link above.

### Source Code for all Platforms

Windows and Mac users most likely want to download the precompiled binaries listed in the upper box, not the source code. The sources have to be compiled before you can use them. If you do not know what this means, you probably do not want to do it!

- The latest release (2020-06-22, Taking Off Again) [R-4.0.2.tar.gz](#), read [what's new](#) in the latest version.
- Sources of [R alpha and beta releases](#) (daily snapshots, created only in time periods before a planned release).
- Daily snapshots of current patched and development versions are [available here](#). Please read about [new features and bug fixes](#) before filing corresponding feature requests or bug reports.
- Source code of older versions of R is [available here](#).
- Contributed extension [packages](#)

### Questions About R

- If you have questions about R like how to download and install the software, or what the license terms are, please read our [answers to frequently asked questions](#) before you send an email.

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## R for Windows

Subdirectories:

[base](#)

Binaries for base distribution. This is what you want to [install R for the first time](#).

[contrib](#)

Binaries of contributed CRAN packages (for R  $\geq$  2.13.x; managed by Uwe Ligges). There is also information on [third party software](#) available for CRAN Windows services and corresponding environment and make variables.

[old contrib](#)

Binaries of contributed CRAN packages for outdated versions of R (for R < 2.13.x; managed by Uwe Ligges).

[Rtools](#)

Tools to build R and R packages. This is what you want to build your own packages on Windows, or to build R itself.

Please do not submit binaries to CRAN. Package developers might want to contact Uwe Ligges directly in case of questions / suggestions related to Windows binaries.

You may also want to read the [R FAQ](#) and [R for Windows FAQ](#).

Note: CRAN does some checks on these binaries for viruses, but cannot give guarantees. Use the normal precautions with downloaded executables.



## 點選後即會下載R安裝檔案

R-4.0.2 for Windows (32/64 bit)

[Download R 4.0.2 for Windows](#) (84 megabytes, 32/64 bit)

[Installation and other instructions](#)

[New features in this version](#)

If you want to double-check that the package you have downloaded matches the package distributed by CRAN, you can compare the [md5sum](#) of the .exe to the [fingerprint](#) on the master server. You will need a version of windows: both [graphical](#) and [command line versions](#) are available.

### Frequently asked questions

- [Does R run under my version of Windows?](#)
- [How do I update packages in my previous version of R?](#)
- [Should I run 32-bit or 64-bit R?](#)

Please see the [R FAQ](#) for general information about R and the [R Windows FAQ](#) for Windows-specific information.

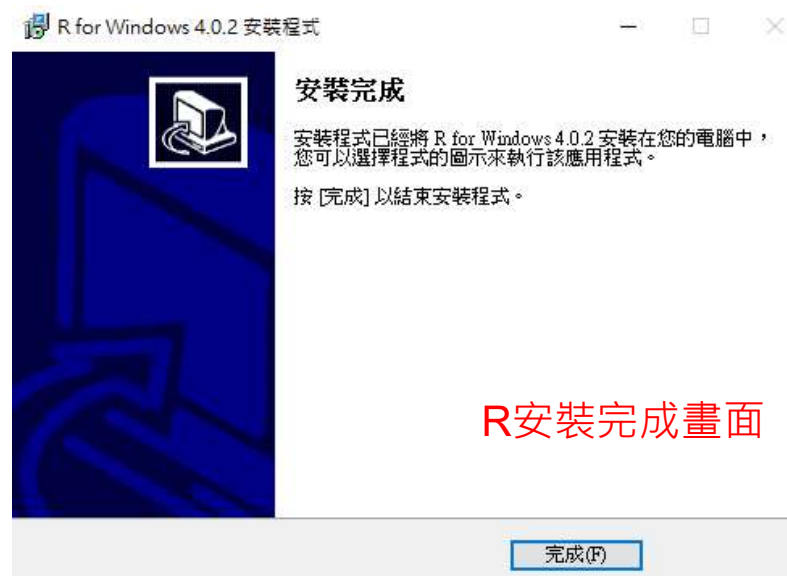
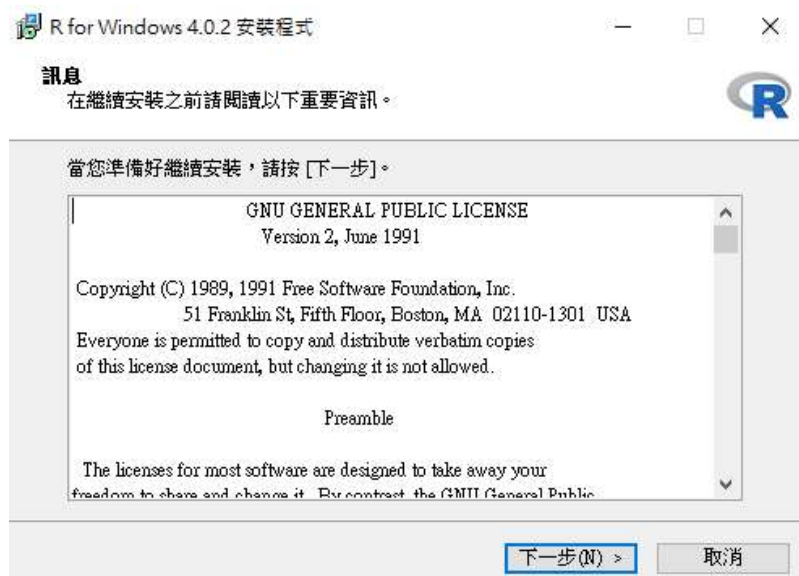
### Other builds

- Patches to this release are incorporated in the [r-patched snapshot build](#).
- A build of the development version (which will eventually become the next major release of R) is available in the [r-devel snapshot build](#).
- [Previous releases](#)

Note to webmasters: A stable link which will redirect to the current Windows binary release is  
[<CRAN MIRROR>/bin/windows/base/release.html](#).

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Last change: 2020-06-22



R安裝完成畫面

安裝過程一直按下一步即可  
請不要隨便修改安裝路徑(例如由C:/改到D:/)



r studio



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rstudio.com › products › download ▾ [翻譯這個網頁](#)

## Download RStudio - RStudio

**RStudio** is a set of integrated tools designed to help you be more productive with R. It includes a console, syntax-highlighting editor that supports direct code ...

[Download RStudio Server](#) · [R Packages](#) · [Older Versions of RStudio](#)

頁面直接連結：<https://rstudio.com/>

## Download RStudio

### Choose Your Version



--首頁往下拉--

### RStudio Desktop 1.3.1056 - [Release Notes](#)

1. Install R. RStudio requires R 3.0.1+.
2. Download RStudio Desktop. Recommended for your system:



Requires Windows 10/8/7 (64-bit)



### All Installers

Linux users may need to [import RStudio's public code-signing key](#) prior to installation, depending on the operating system's security policy.

RStudio requires a 64-bit operating system. If you are on a 32 bit system, you can use an [older version of RStudio](#).

點選後即會下載RStudio安裝檔案

OS	Download	Size	SHA-256
Windows 10/8/7	<a href="#">RStudio-1.3.1056.exe</a>	171.62 MB	a8f1fee5
macOS 10.13+	<a href="#">RStudio-1.3.1056.dmg</a>	148.64 MB	f343c77d
Ubuntu 16	<a href="#">rstudio-1.3.1056-amd64.deb</a>	124.56 MB	cbd5e5e5

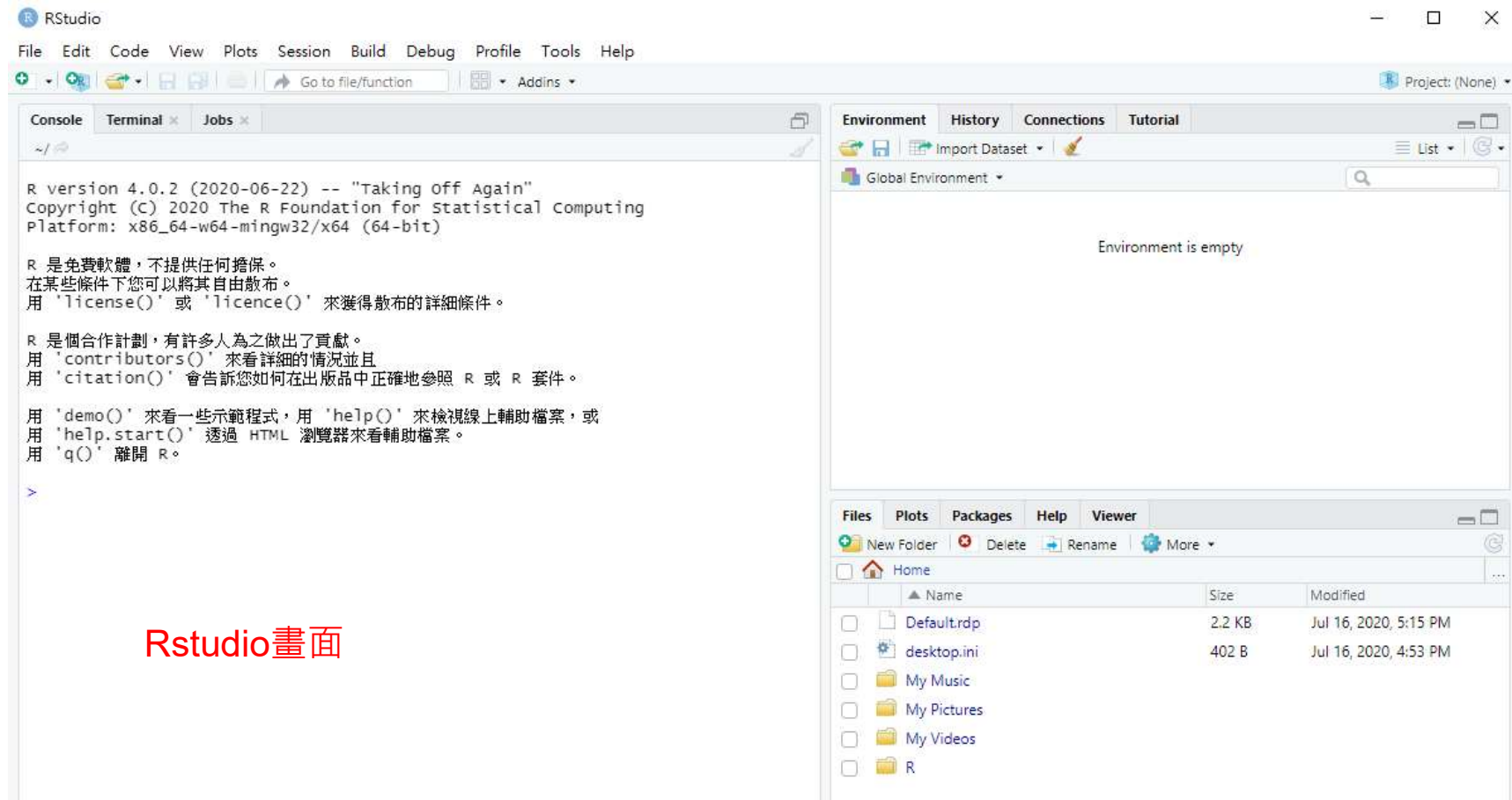


R安裝完成畫面

安裝過程一直按下一步即可  
請不要隨便修改安裝路徑(例如由C:/改到D:/)



找到安裝好的Rstudio應用程式



Rstudio畫面

安裝Anaconda





anaconda



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www.anaconda.com › products › individ... ▾ 翻譯這個網頁

## Individual Edition - Anaconda

Open Source **Anaconda** Individual Edition is the world's most popular Python distribution platform with over 20 million users worldwide. You can trust in...

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頁面直接連結：<https://www.anaconda.com/products/individual>

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Individual Edition

# Your data science toolkit

With over 20 million users worldwide, the open-source Individual Edition (Distribution) is the easiest way to perform Python/R data science and machine learning on a single machine. Developed for solo practitioners, it is the toolkit that equips you to work with thousands of open-source packages and libraries.



往下拉

## Anaconda Installers

### Windows

Python 3.7

**64-Bit Graphical Installer (466 MB)**

32-Bit Graphical Installer (423 MB)

Python 2.7

64-Bit Graphical Installer (413 MB)

32-Bit Graphical Installer (356 MB)

### MacOS

Python 3.7

64-Bit Graphical Installer (442 MB)

64-Bit Command Line Installer (430 MB)

Python 2.7

64-Bit Graphical Installer (637 MB)

64-Bit Command Line Installer (409 MB)

### Linux

Python 3.7

64-Bit (x86) Installer (522 MB)

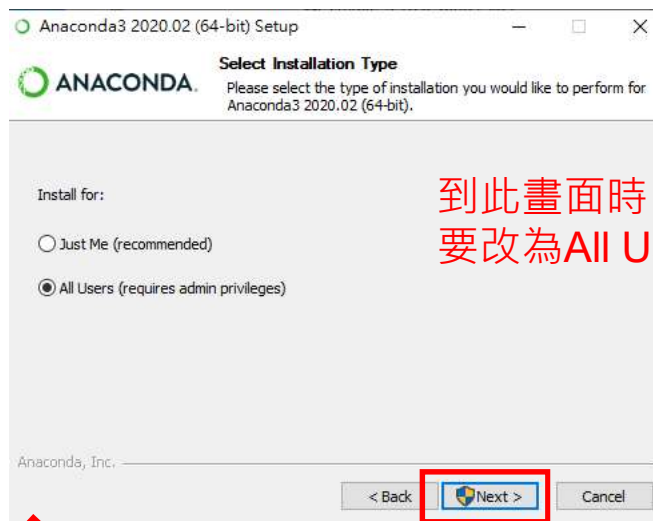
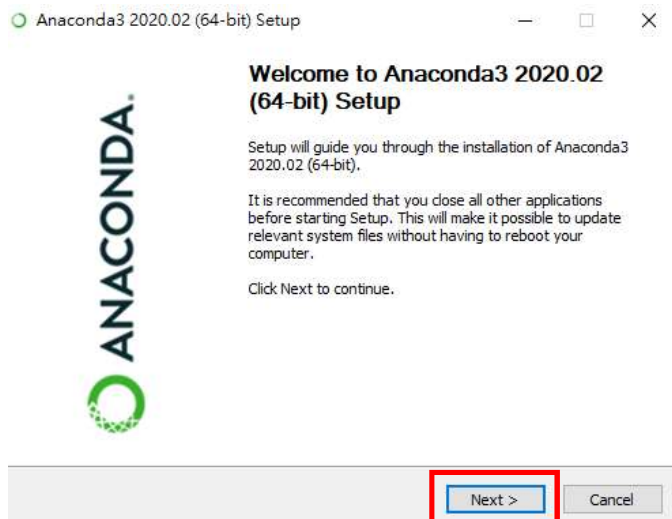
64-Bit (Power8 and Power9) Installer (276 MB)

Python 2.7

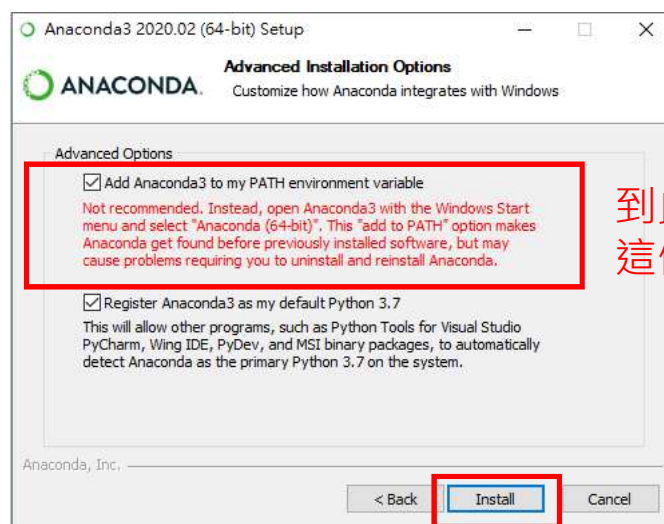
64-Bit (x86) Installer (477 MB)

64-Bit (Power8 and Power9) Installer (295 MB)

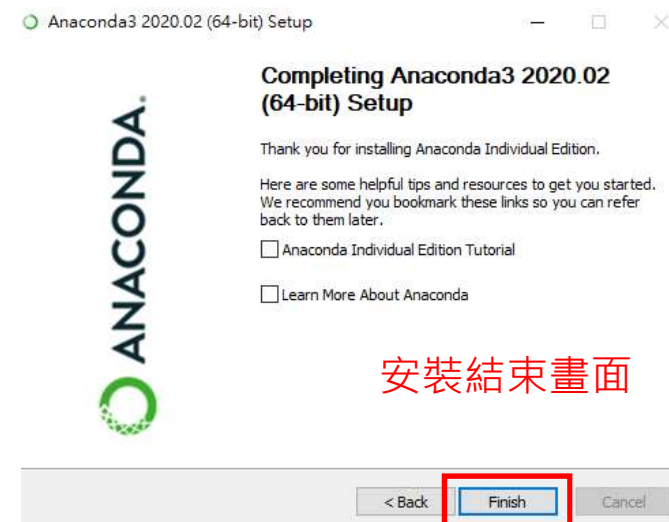
點選下載



到此畫面時  
要改為All Users選項



到此畫面時  
這個一定要打勾!!!



安裝結束畫面

安裝Keras CPU版本

依據官網指引，TensorFlow2.1.0版本開始需要額外安裝適用於 Visual Studio 2015、2017 和 2019 的 Microsoft Visual C ++ 可轉散發套件

下載連結：<https://support.microsoft.com/en-us/help/2977003/the-latest-supported-visual-c-downloads>

The screenshot shows the TensorFlow website's installation guide. The '安裝' (Install) tab is selected in the top navigation bar. On the left sidebar, the '套件' (Packages) section is expanded, and 'pip' is selected. The main content area is for Windows installation. It includes a terminal snippet showing 'virtualenv --version'. The text states that if the required packages are already installed, the user can skip to the next step; otherwise, they need to install Python, pip, and virtualenv. A red box highlights a specific instruction: '安裝適用於 Visual Studio 2015、2017 和 2019 的 Microsoft Visual C ++ 可轉散發套件' (Install the Microsoft Visual C++ redistributable for Visual Studio 2015, 2017, and 2019). Below this, a list of steps is provided, with the first step '前往 Microsoft Visual C ++ 下載頁面' (Go to the Microsoft Visual C++ download page) highlighted by a red box and the word '點選' (Click). The page also includes a terminal command 'C:\> pip3 install -U pip virtualenv' and a note at the bottom about upgrading pip.

TensorFlow

安裝

學習 API 資源 社群 選擇 TensorFlow 的理由

搜尋結果

中文 - 繁體 GitHub 登入

安裝 TensorFlow

套件

pip

Docker

其他設定

GPU 支援

問題

從原始碼開始建構

Linux/macOS

Windows

Raspberry Pi

語言繫結

Java

C

Go

目錄

有可用的 TensorFlow 2 套件

舊版 TensorFlow

系統需求

硬體需求

1. 在系統上安裝 Python 開發環境

2. 建立虛擬環境 (建議)

3. 安裝 TensorFlow pip 套件

套件位置

如果已安裝這些套件，請跳至下一步。  
否則請安裝 [Python](#)、[pip 套件管理員](#) 和 [Virtualenv](#)：

Ubuntu mac OS **Windows** Raspberry Pi 其他

安裝適用於 Visual Studio 2015、2017 和 2019 的 Microsoft Visual C ++ 可轉散發套件。自 TensorFlow 2.1.0 版本開始，這個套件需要 `msvcp140_1.dll` 檔案，但舊版可轉散發套件不一定會提供該檔案。Visual Studio 2019 隨附可轉散發套件，但您可以單獨進行安裝：

1. 前往 [Microsoft Visual C ++ 下載頁面](#)。點選

2. 將頁面向下捲動至 Visual Studio 2015、2017 和 2019 的部分。

3. 依據您使用的平台下載並安裝適用於 Visual Studio 2015、2017 和 2019 的 Microsoft Visual C ++ 可轉散發套件。

確認已在 Windows 上啟用長路徑。

安裝 64 位元適用於 Windows 的 Python 3 版本 (選取 pip 做為選用功能)。

```
C:\> pip3 install -U pip virtualenv
```

注意：升級系統 pip 可能會發生問題。  
如果不是在虛擬環境中，請針對下方指令使用 `python3 -m pip`。這項做法可確保您順利升級並使用 Python pip，而不會使用系統 pip。



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# The latest supported Visual C++ downloads

Applies to: Visual Studio 2010, Visual Studio 2012, Visual Studio 2013, [More](#)

## Notice

Some of the downloads that are mentioned in this article are currently available on [My.VisualStudio.com](#). Make sure to log in by using a Visual Studio Subscription account so that you can access the download links.

If you are asked for credentials, use your existing Visual Studio subscription account or create a free account by selecting "[Create a new Microsoft account](#)."

## Summary

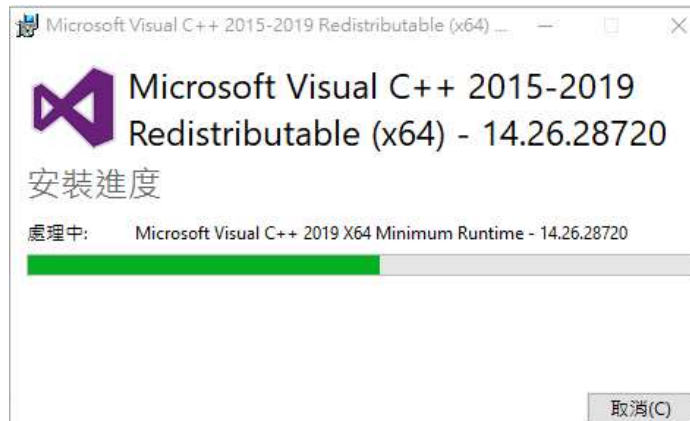
This article lists the download links for the latest versions of Microsoft Visual C++.

### Visual Studio 2015, 2017 and 2019

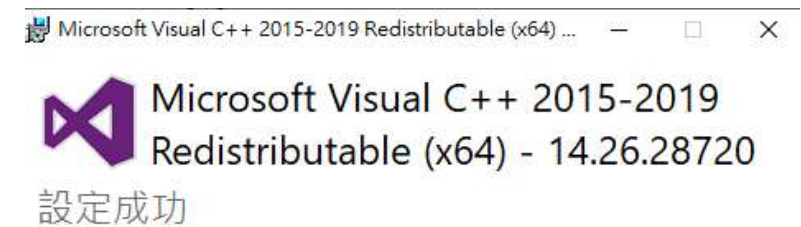
Download the [Microsoft Visual C++ Redistributable for Visual Studio 2015, 2017 and 2019](#). The following updates are the latest supported Visual C++ redistributable packages for Visual Studio 2015, 2017 and 2019. Included is a baseline version of the Universal C Runtime see [MSDN](#) for details.

- x86: [vc\\_redist.x86.exe](#)
- x64: [vc\\_redist.x64.exe](#)
- ARM64: [vc\\_redist.arm64.exe](#)

點選下載



安裝過程一直按下一步即可



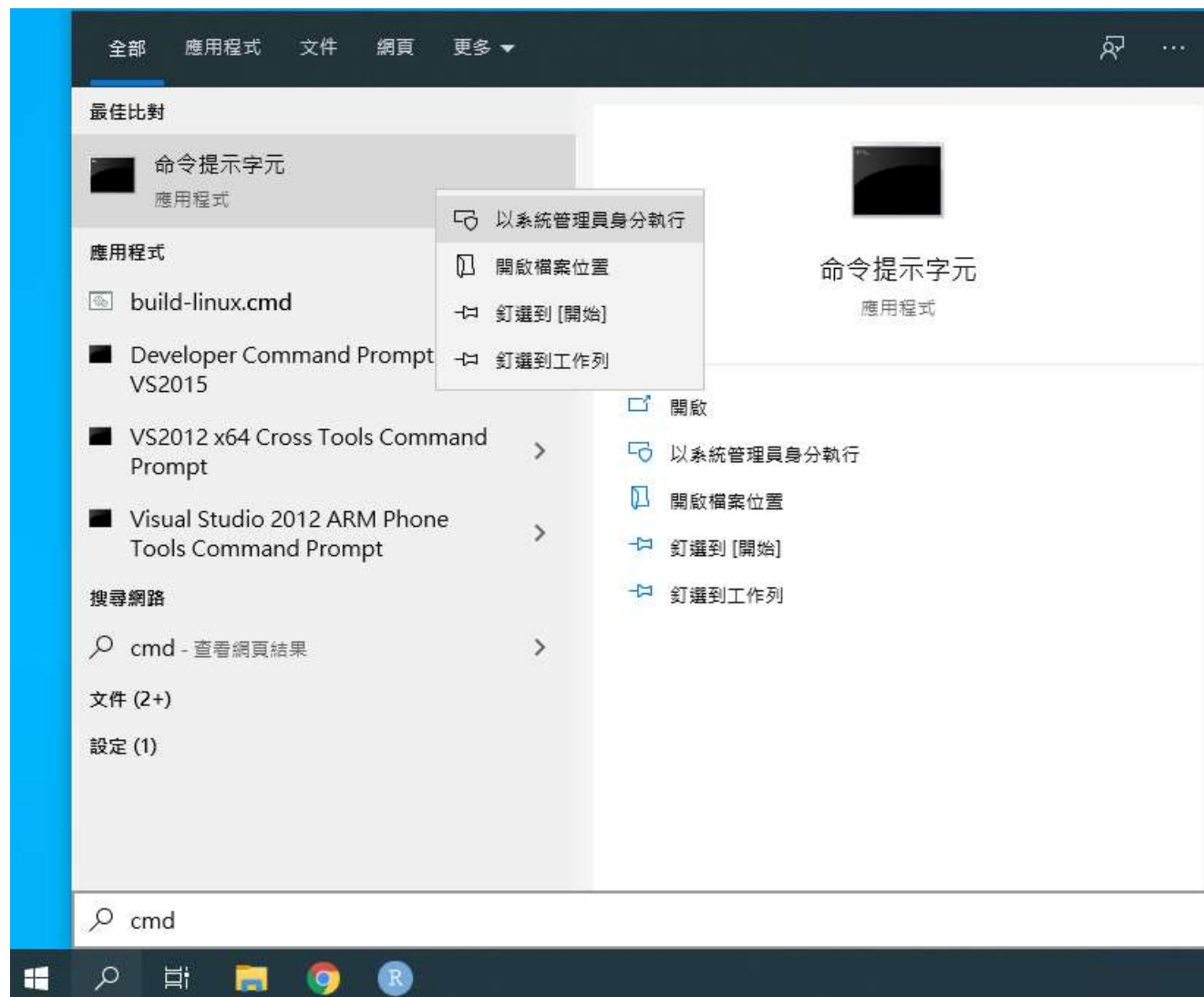
必須重新啟動電腦，才能使用此軟體。

重新啟動(R) 關閉(C)



## 手動安裝虛擬環境(Conda)

以系統管理員身分打開命令提示字元





輸入指令

建立Conda環境，安裝Python3.7版，環境命名為r-reticulate

conda create --name r-reticulate python=3.7

```
系統管理員: 命令提示字元 - conda create --name r-reticulate python=3.7
Microsoft Windows [版本 10.0.18363.959]
(c) 2019 Microsoft Corporation. 著作權所有，並保留一切權利。

C:\WINDOWS\system32>conda create --name r-reticulate python=3.7
Collecting package metadata (current_repodata.json): done
Solving environment: done

## Package Plan ##

  environment location: C:\ProgramData\Anaconda3\envs\r-reticulate

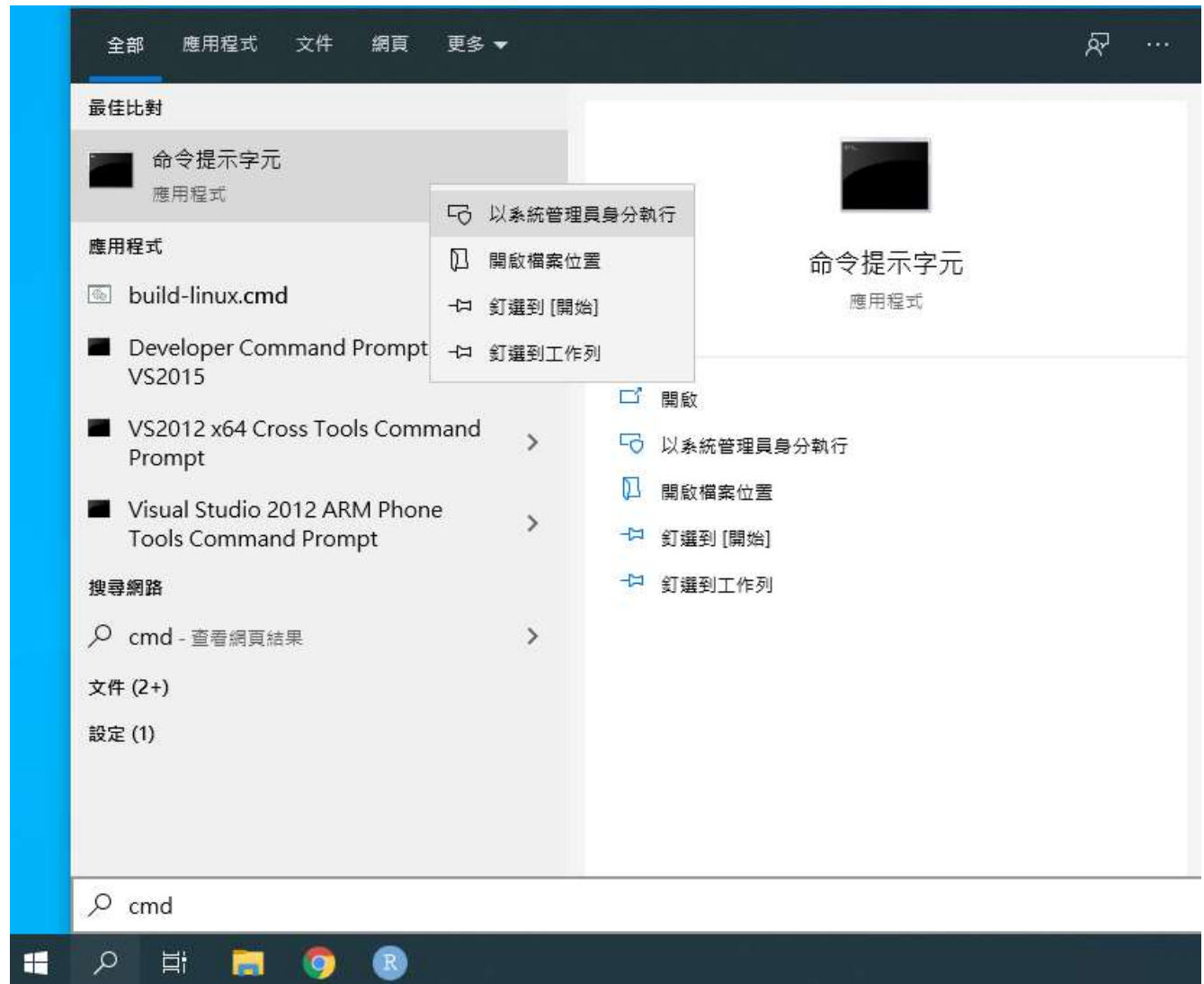
  added / updated specs:
    - python=3.7

The following NEW packages will be INSTALLED:

 ca-certificates    pkgs/main/win-64::ca-certificates-2020.6.24-0
 certifi            pkgs/main/win-64::certifi-2020.6.20-py37_0
 openssl            pkgs/main/win-64::openssl-1.1.1g-he774522_0
 pip                pkgs/main/win-64::pip-20.1.1-py37_1
 python             pkgs/main/win-64::python-3.7.7-h81c818b_4
 setuptools         pkgs/main/win-64::setuptools-49.2.0-py37_0
 sqlite             pkgs/main/win-64::sqlite-3.32.3-h2a8f88b_0
 vc                 pkgs/main/win-64::vc-14.1-h0510ff6_4
 vs2015_runtime     pkgs/main/win-64::vs2015_runtime-14.16.27012-hf0eaf9b_3
 wheel              pkgs/main/win-64::wheel-0.34.2-py37_0
 wincertstore       pkgs/main/win-64::wincertstore-0.2-py37_0
 zlib               pkgs/main/win-64::zlib-1.2.11-h62dcd97_4

Proceed ([y]/n)? y
```

建立好虛擬環境後，  
重新開啟命令提示字元，  
記得要以系統管理員身分執行



依序輸入指令

## 1. 進入r-reticulate虛擬環境

conda activate r-reticulate

## 2. 升級pip套件

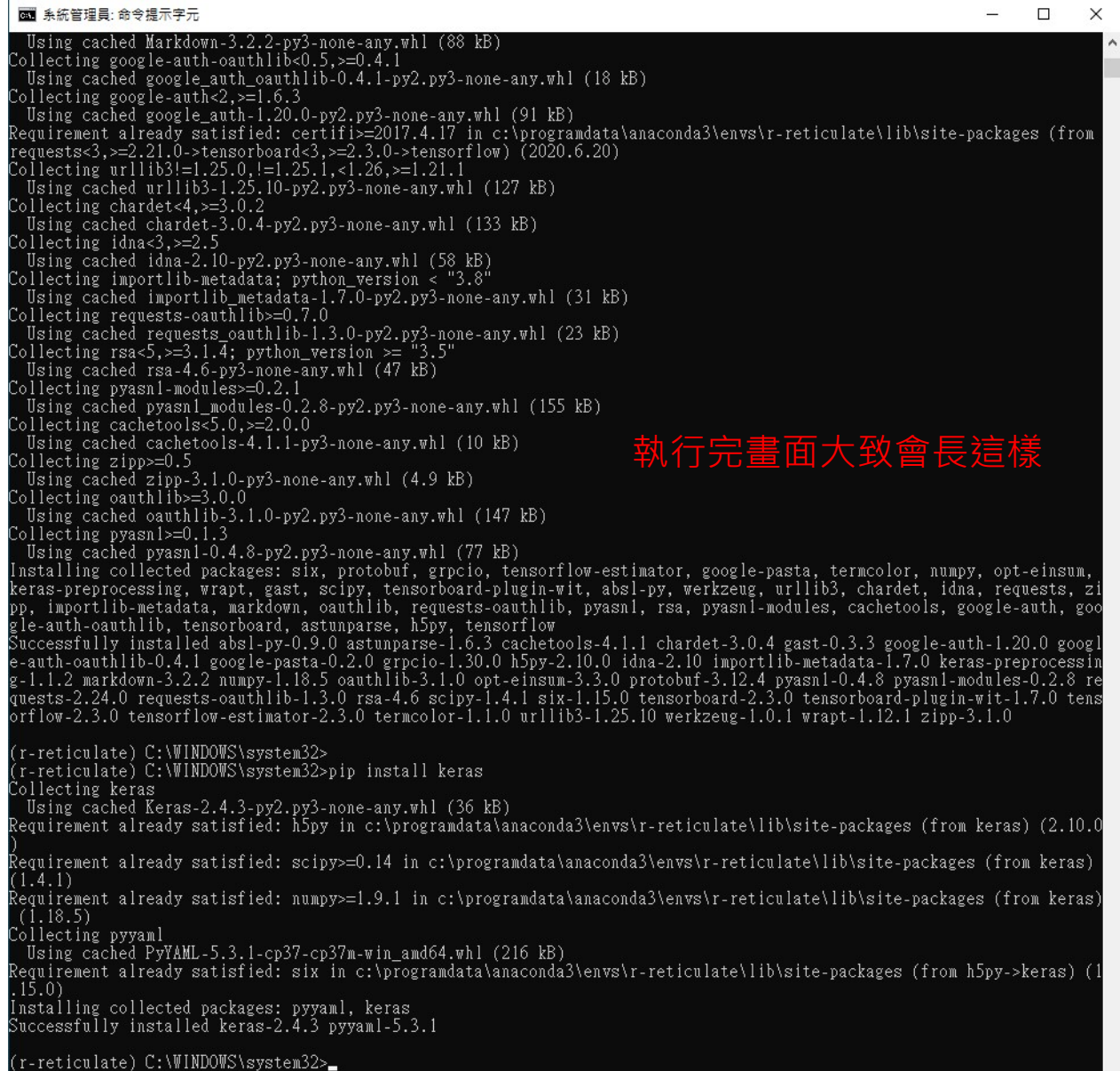
pip install --upgrade pip

## 3. 安裝tensorflow套件

pip install tensorflow==2.2

## 4. 安裝keras套件

pip install keras



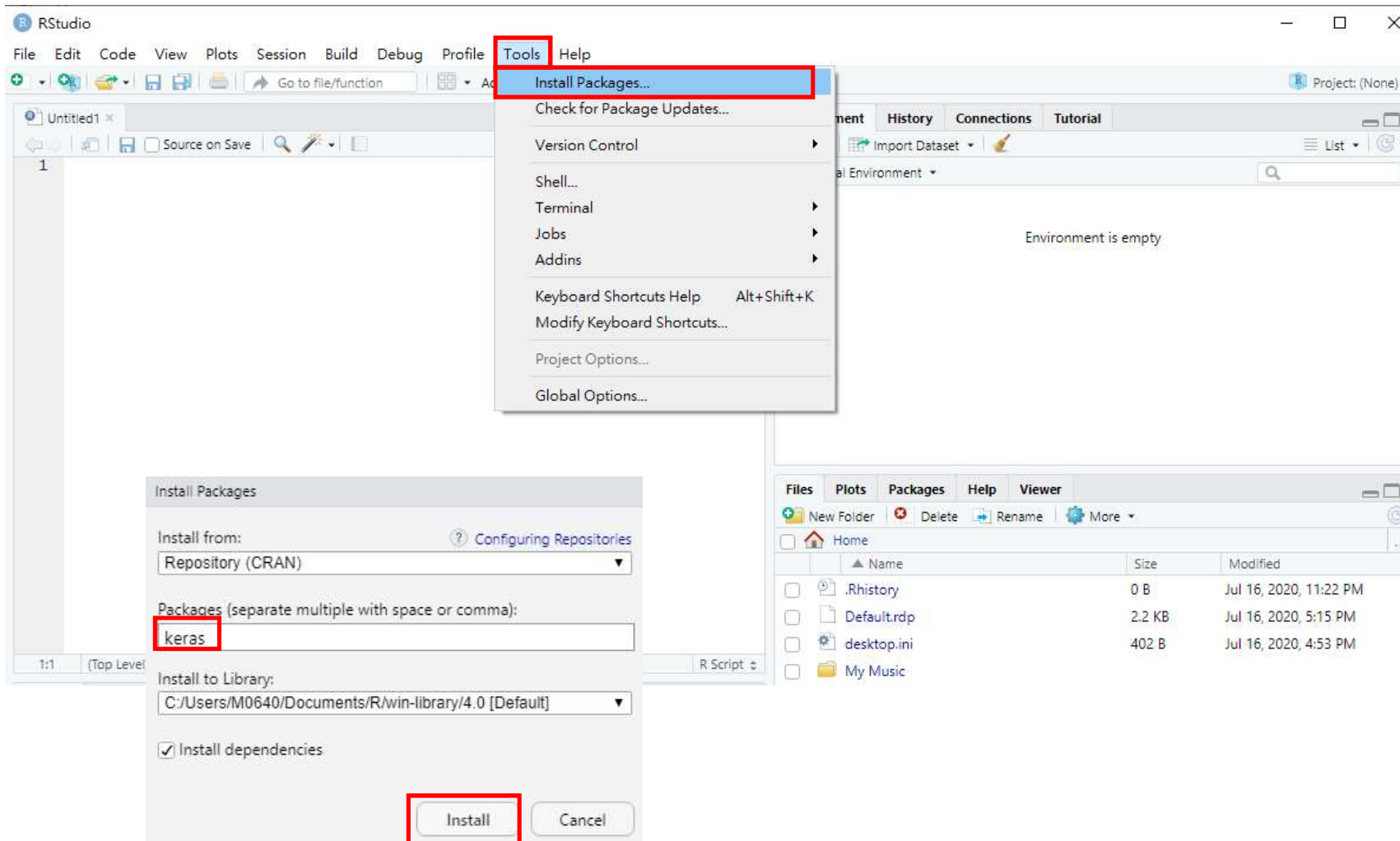
```
系統管理員: 命令提示字元
Using cached Markdown-3.2.2-py3-none-any.whl (88 kB)
Collecting google-auth-oauthlib<0.5,>=0.4.1
Using cached google_auth_oauthlib-0.4.1-py2.py3-none-any.whl (18 kB)
Collecting google-auth<2,>=1.6.3
Using cached google_auth-1.20.0-py2.py3-none-any.whl (91 kB)
Requirement already satisfied: certifi>=2017.4.17 in c:\programdata\anaconda3\envs\r-reticulate\lib\site-packages (from requests<3,>=2.21.0->tensorboard<3,>=2.3.0->tensorflow) (2020.6.20)
Collecting urllib3!=1.25.0,!1.25.1,<1.26,>=1.21.1
Using cached urllib3-1.25.10-py2.py3-none-any.whl (127 kB)
Collecting chardet<4,>=3.0.2
Using cached chardet-3.0.4-py2.py3-none-any.whl (133 kB)
Collecting idna<3,>=2.5
Using cached idna-2.10-py2.py3-none-any.whl (58 kB)
Collecting importlib-metadata; python_version < "3.8"
Using cached importlib_metadata-1.7.0-py2.py3-none-any.whl (31 kB)
Collecting requests-oauthlib>=0.7.0
Using cached requests_oauthlib-1.3.0-py2.py3-none-any.whl (23 kB)
Collecting rsa<5,>=3.1.4; python_version >= "3.5"
Using cached rsa-4.6-py3-none-any.whl (47 kB)
Collecting pyasn1-modules>=0.2.1
Using cached pyasn1_modules-0.2.8-py2.py3-none-any.whl (155 kB)
Collecting cachetools<5.0,>=2.0.0
Using cached cachetools-4.1.1-py3-none-any.whl (10 kB)
Collecting zipp>=0.5
Using cached zipp-3.1.0-py3-none-any.whl (4.9 kB)
Collecting oauthlib>=3.0.0
Using cached oauthlib-3.1.0-py2.py3-none-any.whl (147 kB)
Collecting pyasn1>=0.1.3
Using cached pyasn1-0.4.8-py2.py3-none-any.whl (77 kB)
Installing collected packages: six, protobuf, grpcio, tensorflow-estimator, google-pasta, termcolor, numpy, opt-einsum, keras-preprocessing, wrapt, gast, scipy, tensorboard-plugin-wit, absl-py, werkzeug, urllib3, chardet, idna, requests, zipp, importlib-metadata, markdown, oauthlib, requests-oauthlib, pyasn1, rsa, pyasn1-modules, cachetools, google-auth, google-auth-oauthlib, tensorboard, astunparse, h5py, tensorflow
Successfully installed absl-py-0.9.0 astunparse-1.6.3 cachetools-4.1.1 chardet-3.0.4 gast-0.3.3 google-auth-1.20.0 google-auth-oauthlib-0.4.1 google-pasta-0.2.0 grpcio-1.30.0 h5py-2.10.0 idna-2.10 importlib-metadata-1.7.0 keras-preprocessing-1.1.2 markdown-3.2.2 numpy-1.18.5 oauthlib-3.1.0 opt-einsum-3.3.0 protobuf-3.12.4 pyasn1-0.4.8 pyasn1-modules-0.2.8 requests-2.24.0 requests-oauthlib-1.3.0 rsa-4.6 scipy-1.4.1 six-1.15.0 tensorboard-2.3.0 tensorboard-plugin-wit-1.7.0 tensorflow-2.3.0 tensorflow-estimator-2.3.0 termcolor-1.1.0 urllib3-1.25.10 werkzeug-1.0.1 wrapt-1.12.1 zipp-3.1.0

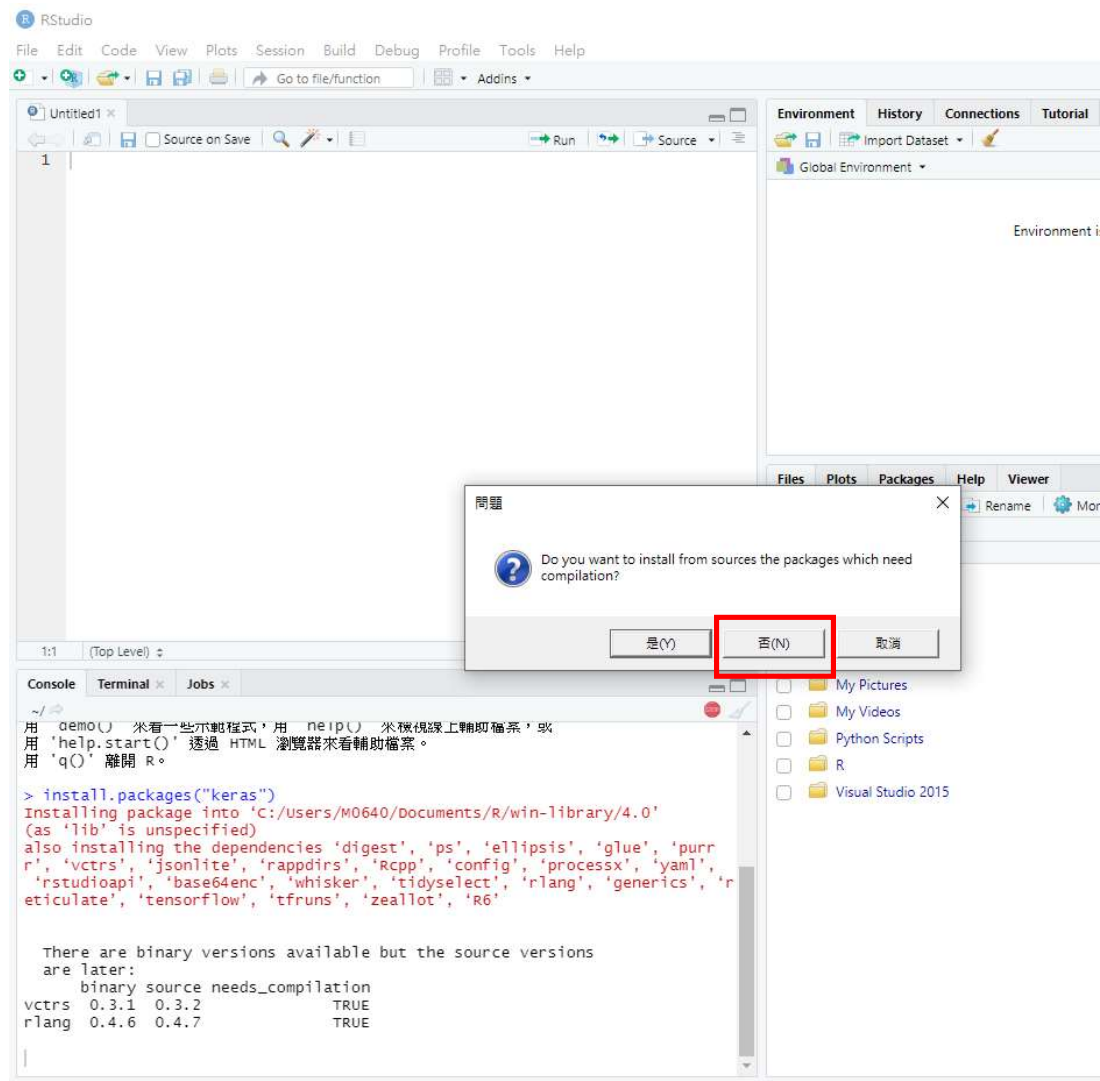
(r-reticulate) C:\WINDOWS\system32>
(r-reticulate) C:\WINDOWS\system32>pip install keras
Collecting keras
Using cached Keras-2.4.3-py2.py3-none-any.whl (36 kB)
Requirement already satisfied: h5py in c:\programdata\anaconda3\envs\r-reticulate\lib\site-packages (from keras) (2.10.0)
Requirement already satisfied: scipy>=0.14 in c:\programdata\anaconda3\envs\r-reticulate\lib\site-packages (from keras) (1.4.1)
Requirement already satisfied: numpy>=1.9.1 in c:\programdata\anaconda3\envs\r-reticulate\lib\site-packages (from keras) (1.18.5)
Collecting pyyaml
Using cached PyYAML-5.3.1-cp37-cp37m-win_amd64.whl (216 kB)
Requirement already satisfied: six in c:\programdata\anaconda3\envs\r-reticulate\lib\site-packages (from h5py->keras) (1.15.0)
Installing collected packages: pyyaml, keras
Successfully installed keras-2.4.3 pyyaml-5.3.1

(r-reticulate) C:\WINDOWS\system32>
```

執行完畫面大致會長這樣

接著開啟R安裝Keras套件





至Rkeras官網下載範例程式碼

下載連結：[https://keras.rstudio.com/articles/examples/mnist\\_mlp.html](https://keras.rstudio.com/articles/examples/mnist_mlp.html)



## mnist\_mlp

[https://github.com/rstudio/keras/blob/master/vignettes/examples/mnist\\_mlp.R](https://github.com/rstudio/keras/blob/master/vignettes/examples/mnist_mlp.R)

Trains a simple deep NN on the MNIST dataset.

Gets to 98.40% test accuracy after 20 epochs (there is a lot of margin for parameter tuning). 2 seconds per epoch on a K520 GPU.

```
library(keras)

# Data Preparation -----

batch_size <- 128
num_classes <- 10
epochs <- 30

# The data, shuffled and split between train and test sets
c(c(x_train, y_train), c(x_test, y_test)) %<-% dataset_mnist()

x_train <- array_reshape(x_train, c(nrow(x_train), 784))
x_test <- array_reshape(x_test, c(nrow(x_test), 784))

# Transform RGB values into [0,1] range
x_train <- x_train / 255
x_test <- x_test / 255

cat(nrow(x_train), 'train samples\n')
cat(nrow(x_test), 'test samples\n')

# Convert class vectors to binary class matrices
y_train <- to_categorical(y_train, num_classes)
y_test <- to_categorical(y_test, num_classes)

# Define Model -----
```

Copy to clipboard



複製全部程式碼



RStudio

File Edit Code View Plots Session Build Debug Profile Tools Help

Go to file/function Addins

Untitled2\*

```
1 library(keras)
2
3 # Data Preparation -----
4
5 batch_size <- 128
6 num_classes <- 10
7 epochs <- 30
8
9 # The data, shuffled and split between train and test sets
10 c(c(x_train, y_train), c(x_test, y_test)) %<-% dataset_mnist()
11
12 x_train <- array_reshape(x_train, c(nrow(x_train), 784))
13 x_test <- array_reshape(x_test, c(nrow(x_test), 784))
14
15 # Transform RGB values into [0,1] range
16 x_train <- x_train / 255
17 x_test <- x_test / 255
18
19 cat(nrow(x_train), 'train samples\n')
20 cat(nrow(x_test), 'test samples\n')
21
22 # Convert class vectors to binary class matrices
23 y_train <- to_categorical(y_train, num_classes)
24 y_test <- to_categorical(y_test, num_classes)
25
26 # Define Model -----
27
28 model <- keras_model_sequential()
29 model %>%
30   layer_dense(units = 256, activation = 'relu', input_shape = c(784))
31   layer_dropout(rate = 0.4) %>%
32   layer_dense(units = 128, activation = 'relu') %>%
33   layer_dropout(rate = 0.3) %>%
34   layer_dense(units = 10, activation = 'softmax')
35
36
```

貼上全部程式碼後執行

Console

```
~/
> # Output metrics
> cat('Test loss:', score[[1]], '\n')
Test loss: 0.1136785
> cat('Test accuracy:', score[[2]], '\n')
Test accuracy: 0.9814
>
```

Environment

History

Connections

Tutorial

Import Dataset

Global Environment

Data

history	List of 2
x_test	Large matrix (7840000 elements, 62.7 MB)
x_train	Large matrix (47040000 elements, 376.3 MB)
y_test	Large matrix (100000 elements, 800.2 kB)
y_train	Large matrix (600000 elements, 4.8 MB)

Files

Plots

Packages

Help

Viewer

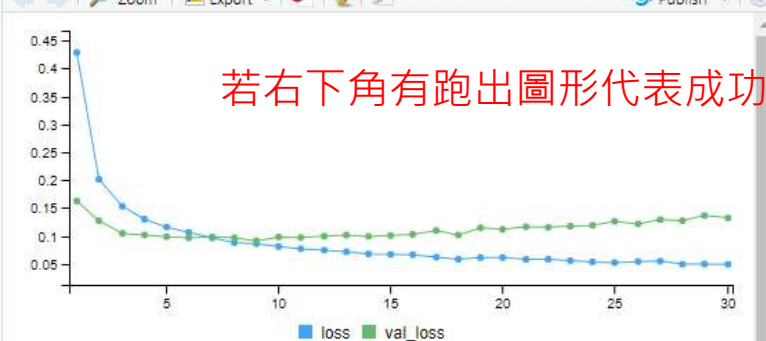
Zoom

Export

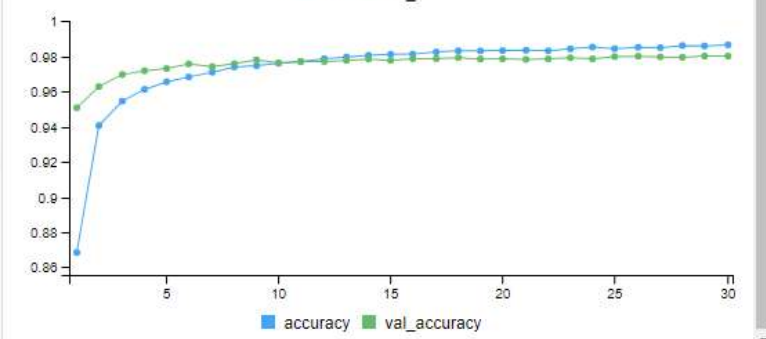
Plot

Plot

Publish



若右下角有跑出圖形代表成功順利執行

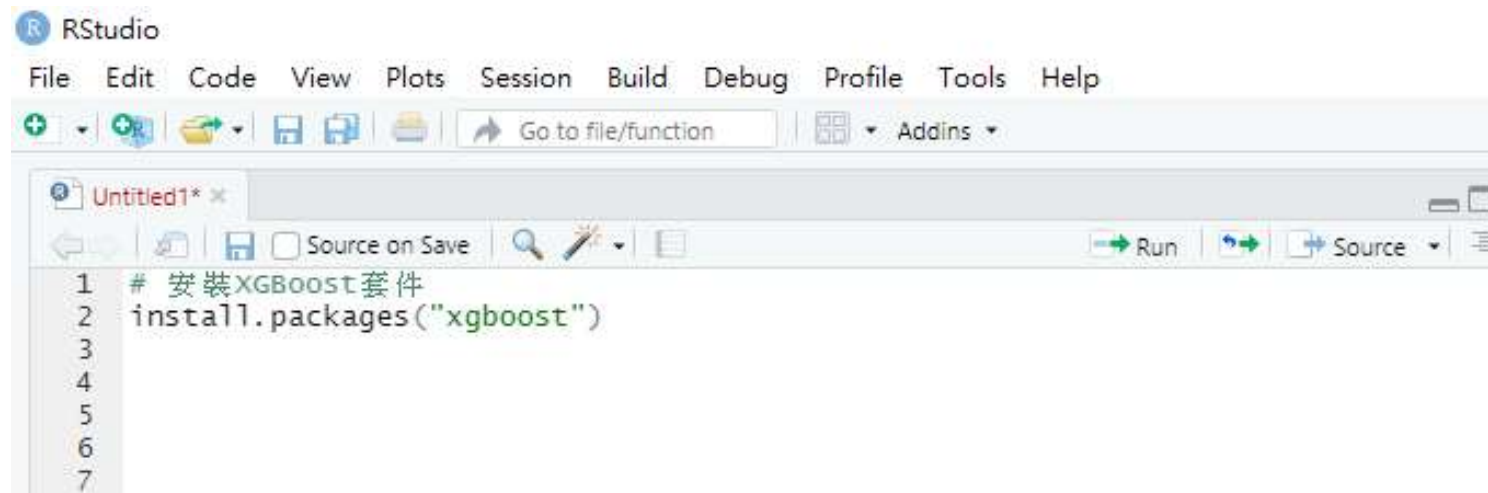


安裝XGBoost CPU版本



輸入程式碼安裝xgboost套件

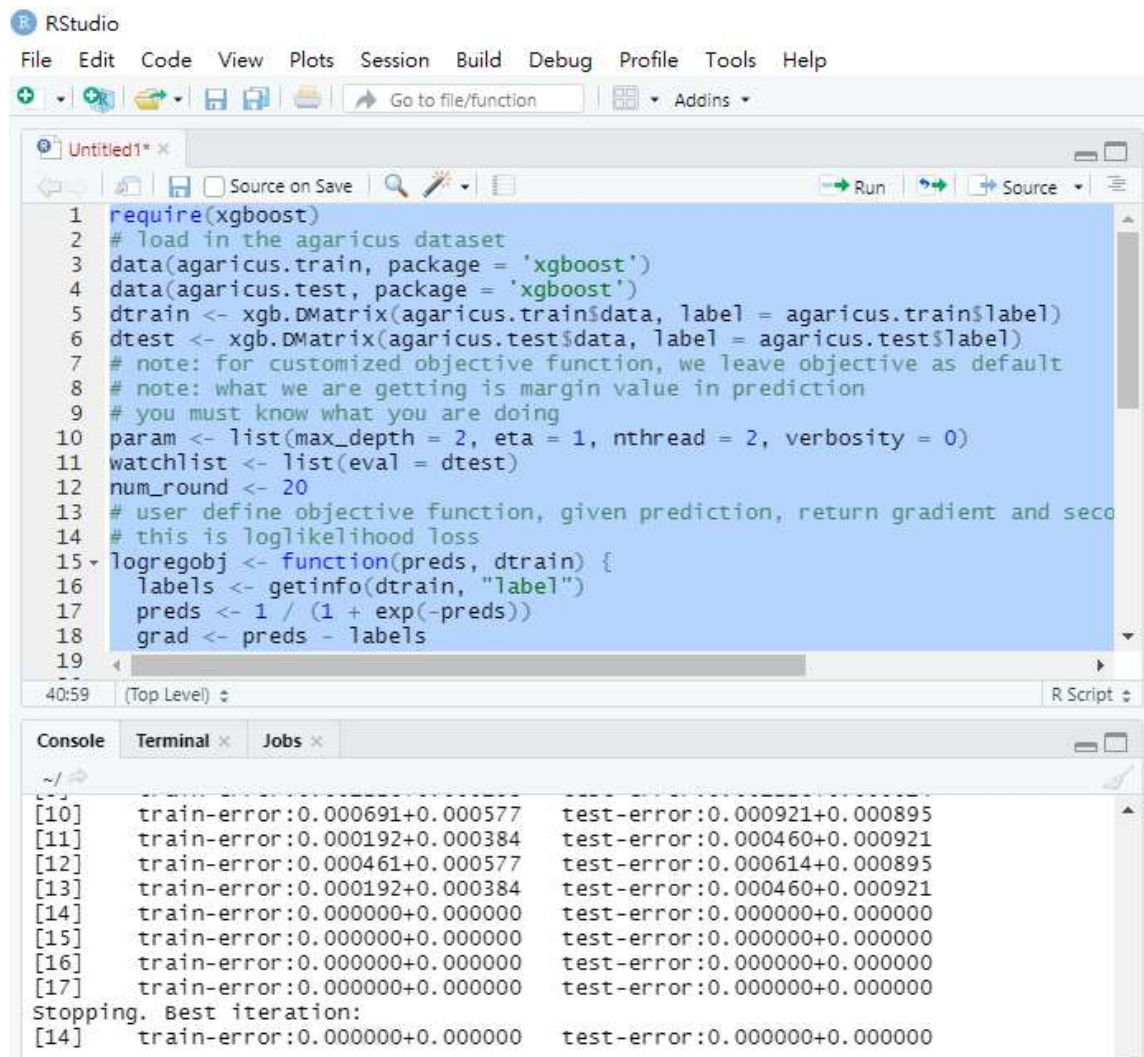
```
install.packages("xgboost")
```



測試XGBoost CPU版本是否能夠正常運作

測試程式碼請參考：

[https://github.com/dmlc/xgboost/blob/master/R-package/demo/early\\_stopping.R](https://github.com/dmlc/xgboost/blob/master/R-package/demo/early_stopping.R)



The screenshot shows the RStudio interface with a script editor and a console. The script editor contains R code for training and testing XGBoost on the agaricus dataset. The console shows the output of the code, including training and test error rates over 14 iterations, and a message indicating that the best iteration is 14.

```
1 require(xgboost)
2 # load in the agaricus dataset
3 data(agaricus.train, package = 'xgboost')
4 data(agaricus.test, package = 'xgboost')
5 dtrain <- xgb.DMatrix(agaricus.train$data, label = agaricus.train$label)
6 dtest <- xgb.DMatrix(agaricus.test$data, label = agaricus.test$label)
7 # note: for customized objective function, we leave objective as default
8 # note: what we are getting is margin value in prediction
9 # you must know what you are doing
10 param <- list(max_depth = 2, eta = 1, nthread = 2, verbosity = 0)
11 watchlist <- list(eval = dtest)
12 num_round <- 20
13 # user define objective function, given prediction, return gradient and second order hessian
14 # this is loglikelihood loss
15 logregobj <- function(preds, dtrain) {
16   labels <- getinfo(dtrain, "label")
17   preds <- 1 / (1 + exp(-preds))
18   grad <- preds - labels
19 }
```

40:59 (Top Level) R Script

Console

```
~/
[10] train-error:0.000691+0.000577 test-error:0.000921+0.000895
[11] train-error:0.000192+0.000384 test-error:0.000460+0.000921
[12] train-error:0.000461+0.000577 test-error:0.000614+0.000895
[13] train-error:0.000192+0.000384 test-error:0.000460+0.000921
[14] train-error:0.000000+0.000000 test-error:0.000000+0.000000
[15] train-error:0.000000+0.000000 test-error:0.000000+0.000000
[16] train-error:0.000000+0.000000 test-error:0.000000+0.000000
[17] train-error:0.000000+0.000000 test-error:0.000000+0.000000
Stopping. Best iteration:
[14] train-error:0.000000+0.000000 test-error:0.000000+0.000000
```

若能順利運作代表安裝成功!

簡報結束  
感謝您的閱讀