

```

> # -----
> # Step 1: Installation of Keras with tensorflow at the backend
> install.packages("devtools")
Installing package into 'C:/Users/KamalakantaMishra/Documents/R/win-librar
y/3.5'
(as 'lib' is unspecified)
trying URL 'https://cran.rstudio.com/bin/windows/contrib/3.5/devtools_1.13
.6.zip'
Content type 'application/zip' length 702430 bytes (685 KB)
downloaded 685 KB

package 'devtools' successfully unpacked and MD5 sums checked

The downloaded binary packages are in
  C:\Users\KamalakantaMishra\AppData\Local\Temp\RtmpY5RyAw\downloaded
_packages
> devtools::install_github("rstudio/keras")
Downloading GitHub repo rstudio/keras@master
from URL https://api.github.com/repos/rstudio/keras/zipball/master
Installing keras
Installing 1 package: tfruns
Installing package into 'C:/Users/KamalakantaMishra/Documents/R/win-librar
y/3.5'
(as 'lib' is unspecified)
also installing the dependencies 'config', 'reticulate'

trying URL 'https://cran.rstudio.com/bin/windows/contrib/3.5/config_0.3.zi
p'
Content type 'application/zip' length 27174 bytes (26 KB)
downloaded 26 KB

trying URL 'https://cran.rstudio.com/bin/windows/contrib/3.5/reticulate_1.
10.zip'
Content type 'application/zip' length 1595920 bytes (1.5 MB)
downloaded 1.5 MB

trying URL 'https://cran.rstudio.com/bin/windows/contrib/3.5/tfruns_1.3.zi
p'
Content type 'application/zip' length 1477412 bytes (1.4 MB)
downloaded 1.4 MB

package 'config' successfully unpacked and MD5 sums checked
package 'reticulate' successfully unpacked and MD5 sums checked
package 'tfruns' successfully unpacked and MD5 sums checked

The downloaded binary packages are in
  C:\Users\KamalakantaMishra\AppData\Local\Temp\RtmpY5RyAw\downloaded
_packages
Installing 1 package: zeallot
Installing package into 'C:/Users/KamalakantaMishra/Documents/R/win-librar
y/3.5'
(as 'lib' is unspecified)
trying URL 'https://cran.rstudio.com/bin/windows/contrib/3.5/zeallot_0.1.0
.zip'
Content type 'application/zip' length 61459 bytes (60 KB)
downloaded 60 KB

package 'zeallot' successfully unpacked and MD5 sums checked

The downloaded binary packages are in
  C:\Users\KamalakantaMishra\AppData\Local\Temp\RtmpY5RyAw\downloaded
_packages
Downloading GitHub repo rstudio/reticulate@master
from URL https://api.github.com/repos/rstudio/reticulate/zipball/master
trying URL 'https://cran.rstudio.com/bin/windows/Rtools/Rtools35.exe'
Content type 'application/x-msdos-program' length 108622512 bytes (103.6 M
B)
downloaded 103.6 MB

```

WARNING: Rtools is required to build R packages, but is not currently installed.

Please download and install the appropriate version of Rtools from <http://cran.r-project.org/bin/windows/Rtools/>.

Installation failed: Could not find build tools necessary to build reticulate

Downloading GitHub repo rstudio/tensorflow@master

from URL <https://api.github.com/repos/rstudio/tensorflow/zipball/master>

Installing tensorflow

Installing 1 package: processx

Installing package into 'C:/Users/KamalakantaMishra/Documents/R/win-library/3.5'

(as 'lib' is unspecified)

also installing the dependencies 'praise', 'testthat'

trying URL 'https://cran.rstudio.com/bin/windows/contrib/3.5/praise_1.0.0.zip'

Content type 'application/zip' length 19485 bytes (19 KB)

downloaded 19 KB

trying URL 'https://cran.rstudio.com/bin/windows/contrib/3.5/testthat_2.0.0.zip'

Content type 'application/zip' length 1594906 bytes (1.5 MB)

downloaded 1.5 MB

trying URL 'https://cran.rstudio.com/bin/windows/contrib/3.5/processx_3.1.0.zip'

Content type 'application/zip' length 1016619 bytes (992 KB)

downloaded 992 KB

package 'praise' successfully unpacked and MD5 sums checked

package 'testthat' successfully unpacked and MD5 sums checked

package 'processx' successfully unpacked and MD5 sums checked

The downloaded binary packages are in

C:\Users\KamalakantaMishra\AppData\Local\Temp\RtmpY5RyAw\downloaded_packages

Installing 1 package: yaml

Installing package into 'C:/Users/KamalakantaMishra/Documents/R/win-library/3.5'

(as 'lib' is unspecified)

trying URL 'https://cran.rstudio.com/bin/windows/contrib/3.5/yaml_2.2.0.zip'

Content type 'application/zip' length 203532 bytes (198 KB)

downloaded 198 KB

package 'yaml' successfully unpacked and MD5 sums checked

Warning: cannot remove prior installation of package 'yaml'

The downloaded binary packages are in

C:\Users\KamalakantaMishra\AppData\Local\Temp\RtmpY5RyAw\downloaded_packages

Downloading GitHub repo rstudio/reticulate@master

from URL <https://api.github.com/repos/rstudio/reticulate/zipball/master>

trying URL 'https://cran.rstudio.com/bin/windows/Rtools/Rtools35.exe'

Content type 'application/x-msdos-program' length 108622512 bytes (103.6 MB)

downloaded 103.6 MB

WARNING: Rtools is required to build R packages, but no version of Rtools compatible with R 3.5.0 was found. (Only the following incompatible version(s) of Rtools were found:3.5)

Please download and install the appropriate version of Rtools from <http://cran.r-project.org/bin/windows/Rtools/>.

Installation failed: Could not find build tools necessary to build reticulate

```
"C:/PROGRA~1/R/R-35~1.0/bin/x64/R" --no-site-file --no-enviro n --no-save -  
-no-restore --quiet CMD INSTALL \\  
"C:/Users/KamalakantaMishra/AppData/Local/Temp/RtmpY5RyAw/devtools934c13  
d2376c/rstudio-tensorflow-cba12be" \\  
--library="C:/Users/KamalakantaMishra/Documents/R/win-library/3.5" --ins  
tall-tests
```

```
ERROR: dependency 'yaml' is not available for package 'tensorflow'  
* removing 'C:/Users/KamalakantaMishra/Documents/R/win-library/3.5/tensorf  
low'
```

```
In R CMD INSTALL
```

```
Installation failed: Command failed (1)
```

```
"C:/PROGRA~1/R/R-35~1.0/bin/x64/R" --no-site-file --no-enviro n --no-save -  
-no-restore --quiet CMD INSTALL \\  
"C:/Users/KamalakantaMishra/AppData/Local/Temp/RtmpY5RyAw/devtools934c10  
9836ed/rstudio-keras-62e142d" \\  
--library="C:/Users/KamalakantaMishra/Documents/R/win-library/3.5" --ins  
tall-tests
```

```
ERROR: dependency 'tensorflow' is not available for package 'keras'  
* removing 'C:/Users/KamalakantaMishra/Documents/R/win-library/3.5/keras'  
In R CMD INSTALL  
Installation failed: Command failed (1)
```

```
> # The above step will load the keras library from the GitHub repository.  
Now it is time to load keras into R and install tensorflow.
```

```
> library(keras)
```

```
Error in library(keras) : there is no package called 'keras'
```

```
Restarting R session...
```

```
> install.packages("keras")
```

```
Installing package into 'C:/Users/KamalakantaMishra/Documents/R/win-librar  
y/3.5'  
(as 'lib' is unspecified)
```

```
also installing the dependencies 'yaml', 'tensorflow'
```

```
There is a binary version available but the source version is later:  
binary source needs_compilation  
tensorflow 1.8 1.9 FALSE
```

```
trying URL 'https://cran.rstudio.com/bin/windows/contrib/3.5/yaml_2.2.0.zi  
p'  
Content type 'application/zip' length 203532 bytes (198 KB)  
downloaded 198 KB
```

```
trying URL 'https://cran.rstudio.com/bin/windows/contrib/3.5/keras_2.1.6.z  
ip'  
Content type 'application/zip' length 2342118 bytes (2.2 MB)  
downloaded 2.2 MB
```

```
package 'yaml' successfully unpacked and MD5 sums checked  
package 'keras' successfully unpacked and MD5 sums checked
```

```
The downloaded binary packages are in  
C:\Users\KamalakantaMishra\AppData\Local\Temp\RtmpA1XE0T\downloaded  
_packages
```

```
installing the source package 'tensorflow'
```

```
trying URL 'https://cran.rstudio.com/src/contrib/tensorflow_1.9.tar.gz'  
Content type 'application/x-gzip' length 47107 bytes (46 KB)  
downloaded 46 KB
```

```
* installing *source* package 'tensorflow' ...  
** package 'tensorflow' successfully unpacked and MD5 sums checked  
** R  
** inst  
** byte-compile and prepare package for lazy loading  
** help
```

```

*** installing help indices
converting help for package 'tensorflow'
  finding HTML links ... done
    all_dims                      html
    evaluate                      html
    export_savedmodel             html
    install_tensorflow             html
    install_tensorflow_extras     html
    parse_arguments               html
    finding level-2 HTML links ... done

    parse_flags                   html
    reexports                     html
Rd warning: C:/Users/KamalakantaMishra/AppData/Local/Temp/Rtmpushua7/R.IN
TALL6eb46e85578f/tensorflow/man/reexports.Rd:44: file link '%as%' in packa
ge 'reticulate' does not exist and so has been treated as a topic
Rd warning: C:/Users/KamalakantaMishra/AppData/Local/Temp/Rtmpushua7/R.IN
TALL6eb46e85578f/tensorflow/man/reexports.Rd:44: file link 'use_virtualenv
' in package 'reticulate' does not exist and so has been treated as a topi
c
Rd warning: C:/Users/KamalakantaMishra/AppData/Local/Temp/Rtmpushua7/R.IN
TALL6eb46e85578f/tensorflow/man/reexports.Rd:44: file link 'use_condaenv'
in package 'reticulate' does not exist and so has been treated as a topic
Rd warning: C:/Users/KamalakantaMishra/AppData/Local/Temp/Rtmpushua7/R.IN
TALL6eb46e85578f/tensorflow/man/reexports.Rd:46: file link 'flag_numeric'
in package 'tfruns' does not exist and so has been treated as a topic
Rd warning: C:/Users/KamalakantaMishra/AppData/Local/Temp/Rtmpushua7/R.IN
TALL6eb46e85578f/tensorflow/man/reexports.Rd:46: file link 'flag_integer'
in package 'tfruns' does not exist and so has been treated as a topic
Rd warning: C:/Users/KamalakantaMishra/AppData/Local/Temp/Rtmpushua7/R.IN
TALL6eb46e85578f/tensorflow/man/reexports.Rd:46: file link 'flag_string' i
n package 'tfruns' does not exist and so has been treated as a topic
Rd warning: C:/Users/KamalakantaMishra/AppData/Local/Temp/Rtmpushua7/R.IN
TALL6eb46e85578f/tensorflow/man/reexports.Rd:46: file link 'flag_boolean'
in package 'tfruns' does not exist and so has been treated as a topic
    shape                        html
    sub-.tensorflow.tensor       html
    tensorboard                  html
    tensorflow                    html
    tf                           html
    tf_config                     html
    tf_extract_opts              html
    tfe_enable_eager_execution   html
    train                        html
    train_and_evaluate           html
    use_session_with_seed        html
    view_savedmodel              html
** building package indices
** testing if installed package can be loaded
*** arch - i386
*** arch - x64
* DONE (tensorflow)
In R CMD INSTALL

```

The downloaded source packages are in
 'C:\Users\KamalakantaMishra\AppData\Local\Temp\Rtmpa1XE0T\downloaded_packages'

> # The above step will load the keras library from the GitHub repository.
 Now it is time to load keras into R and install tensorflow.

> library(keras)

Warning message:

package 'keras' was built under R version 3.5.1

Restarting R session...

> install.packages("tensorflow")

Installing package into 'C:/Users/KamalakantaMishra/Documents/R/win-librar
 y/3.5'

(as 'lib' is unspecified)

```
There is a binary version available but the source version is later:
      binary source needs_compilation
tensorflow 1.8      1.9      FALSE
```

installing the source package 'tensorflow'

trying URL 'https://cran.rstudio.com/src/contrib/tensorflow_1.9.tar.gz'
Content type 'application/x-gzip' length 47107 bytes (46 KB)
downloaded 46 KB

```
* installing *source* package 'tensorflow' ...
** package 'tensorflow' successfully unpacked and MD5 sums checked
** R
** inst
** byte-compile and prepare package for lazy loading
** help
```

```
*** installing help indices
    converting help for package 'tensorflow'
      finding HTML links ... done
      all_dims                      html
      evaluate                      html
      export_savedmodel             html
      install_tensorflow            html
      install_tensorflow_extras     html
      parse_arguments               html
      finding level-2 HTML links ... done
      parse_flags                   html
      reexports                     html
```

```
Rd warning: C:/Users/KamalakantaMishra/AppData/Local/Temp/RtmpQ3aKBP/R.INSTALLa76c15452a98/tensorflow/man/reexports.Rd:44: file link '%as%' in package 'reticulate' does not exist and so has been treated as a topic
```

```
Rd warning: C:/Users/KamalakantaMishra/AppData/Local/Temp/RtmpQ3aKBP/R.INSTALLa76c15452a98/tensorflow/man/reexports.Rd:44: file link 'use_virtualenv' in package 'reticulate' does not exist and so has been treated as a topic
```

```
Rd warning: C:/Users/KamalakantaMishra/AppData/Local/Temp/RtmpQ3aKBP/R.INSTALLa76c15452a98/tensorflow/man/reexports.Rd:44: file link 'use_condaenv' in package 'reticulate' does not exist and so has been treated as a topic
```

```
Rd warning: C:/Users/KamalakantaMishra/AppData/Local/Temp/RtmpQ3aKBP/R.INSTALLa76c15452a98/tensorflow/man/reexports.Rd:46: file link 'flag_numeric' in package 'tfruns' does not exist and so has been treated as a topic
```

```
Rd warning: C:/Users/KamalakantaMishra/AppData/Local/Temp/RtmpQ3aKBP/R.INSTALLa76c15452a98/tensorflow/man/reexports.Rd:46: file link 'flag_integer' in package 'tfruns' does not exist and so has been treated as a topic
```

```
Rd warning: C:/Users/KamalakantaMishra/AppData/Local/Temp/RtmpQ3aKBP/R.INSTALLa76c15452a98/tensorflow/man/reexports.Rd:46: file link 'flag_string' in package 'tfruns' does not exist and so has been treated as a topic
```

```
Rd warning: C:/Users/KamalakantaMishra/AppData/Local/Temp/RtmpQ3aKBP/R.INSTALLa76c15452a98/tensorflow/man/reexports.Rd:46: file link 'flag_boolean' in package 'tfruns' does not exist and so has been treated as a topic
```

```
      shape                        html
      sub-.tensorflow.tensor       html
      tensorboard                  html
      tensorflow                   html
      tf                           html
      tf_config                    html
      tf_extract_opts              html
      tfe_enable_eager_execution   html
      train                        html
      train_and_evaluate           html
      use_session_with_seed        html
      view_savedmodel              html
```

```
** building package indices
** testing if installed package can be loaded
*** arch - i386
*** arch - x64
* DONE (tensorflow)
```

In R CMD INSTALL

The downloaded source packages are in
'C:\Users\KamalakantaMishra\AppData\Local\Temp\RtmpicCMnk\downloaded_packages'

```
> library(tensorflow)
> # By default RStudio loads the CPU version of tensorflow. Use the below
command to download
> # the CPU version of tensorflow.
> install_tensorflow()
```

Creating r-tensorflow conda environment for TensorFlow installation...
Solving environment: ...working... done

```
==> WARNING: A newer version of conda exists. <==
current version: 4.5.4
latest version: 4.5.9
```

Please update conda by running

```
$ conda update -n base conda
```

Package Plan

environment location: C:\Users\KamalakantaMishra\AppData\Local\conda\conda\envs\r-tensorflow

added / updated specs:
- python=3.6

The following packages will be downloaded:

package	build	
vs2015_runtime-15.5.2	3	2.2 MB
python-3.6.6	hea74fb7_0	21.6 MB
vc-14.1	h0510ff6_3	5 KB
setuptools-39.2.0	py36_0	571 KB
Total:		24.3 MB

The following NEW packages will be INSTALLED:

certifi:	2018.4.16-py36_0
pip:	10.0.1-py36_0
python:	3.6.6-hea74fb7_0
setuptools:	39.2.0-py36_0
vc:	14.1-h0510ff6_3
vs2015_runtime:	15.5.2-3
wheel:	0.31.1-py36_0
wincertstore:	0.2-py36h7fe50ca_0

Downloading and Extracting Packages

vs2015_runtime-15.5.	2.2 MB	#####	100%
python-3.6.6	21.6 MB	#####	100%
vc-14.1	5 KB	#####	100%
setuptools-39.2.0	571 KB	#####	100%

Preparing transaction: ...working... done

Verifying transaction: ...working... done

Executing transaction: ...working... done

#

To activate this environment, use:

```
# > activate r-tensorflow
```

#

To deactivate an active environment, use:

```
# > deactivate
#
# * for power-users using bash, you must source
#
```

Solving environment: ...working... done

```
==> WARNING: A newer version of conda exists. <==
current version: 4.5.4
latest version: 4.5.9
```

Please update conda by running

```
$ conda update -n base conda
```

Package Plan

environment location: C:\Users\KamalakantaMishra\AppData\Local\conda\conda\envs\r-tensorflow

added / updated specs:

```
- h5py
- keras
- pillow
- pyyaml
- requests
- scipy
- tensorflow
- tensorflow-hub
```

The following packages will be downloaded:

	package	build		
	certifi-2018.4.16	py36_0	143 KB	conda-fo
rge	jpeg-9c	hfa6e2cd_0	314 KB	conda-fo
rge	markupsafe-1.0	py36_0	26 KB	conda-fo
rge	mk1-2018.0.3	1	178.1 MB	
	protobuf-3.5.2	py36he51fdeb_0	511 KB	conda-fo
rge	abs1-py-0.3.0	py_0	76 KB	conda-fo
rge	tensorflow-hub-0.1.1	py_0	39 KB	conda-fo
rge	numpy-base-1.14.3	py36h5c71026_0	3.8 MB	
	urllib3-1.23	py36_1	153 KB	conda-fo
rge	termcolor-1.1.0	py_2	6 KB	conda-fo
rge	theano-1.0.2	py36_0	3.7 MB	conda-fo
rge	cryptography-vectors-2.3	py36_1	30.4 MB	conda-fo
rge	zlib-1.2.11	h2fa13f4_3	235 KB	conda-fo
rge	werkzeug-0.14.1	py_0	249 KB	conda-fo
rge	pyyaml-3.12	py36_1	132 KB	conda-fo
rge	astor-0.7.1	py_0	22 KB	conda-fo

win_inet_pton-1.0.1		py36_1	5 KB	conda-fo
rge gast-0.2.0		py_0	9 KB	conda-fo
rge libpng-1.6.35		h7602738_0	1.3 MB	conda-fo
rge cryptography-2.3		py36h74b6da3_0	505 KB	conda-fo
rge pycparser-2.18		py_1	84 KB	conda-fo
rge six-1.11.0		py36_1	21 KB	conda-fo
rge markdown-2.6.11		py_0	56 KB	conda-fo
rge numpy-1.14.3		py36h9fa60d3_2	42 KB	
h5py-2.8.0		py36hb24199d_1	833 KB	conda-fo
rge tensorboard-1.9.0		py36_0	3.3 MB	conda-fo
rge libtiff-4.0.9		hf1753bf_1	828 KB	conda-fo
rge pillow-5.2.0		py36_0	771 KB	conda-fo
rge requests-2.19.1		py36_1	94 KB	conda-fo
rge libgpuarray-0.7.6		hfa6e2cd_3	314 KB	conda-fo
rge tensorflow-1.9.0		py36_0	31.7 MB	conda-fo
rge openssl-1.0.2o		hfa6e2cd_1	5.4 MB	conda-fo
rge asn1crypto-0.24.0		py_1	72 KB	conda-fo
rge hdf5-1.10.2		hbc3b0e7_1	34.8 MB	conda-fo
rge mkl_random-1.0.1		py36_0	267 KB	conda-fo
rge keras-2.1.6		py36_0	500 KB	conda-fo
rge yaml-0.1.7		hfa6e2cd_1	221 KB	conda-fo
rge intel-openmp-2018.0.3		0	1.7 MB	
pygpu-0.7.6		py36_0	582 KB	conda-fo
rge cffi-1.11.5		py36hfa6e2cd_1	211 KB	conda-fo
rge ca-certificates-2018.4.16		0	176 KB	conda-fo
rge chardet-3.0.4		py36_3	209 KB	conda-fo
rge olefile-0.45.1		py_1	30 KB	conda-fo
rge pyopenssl-18.0.0		py36_0	80 KB	conda-fo
rge mkl_fft-1.0.5		py36_0	120 KB	conda-fo
rge pyreadline-2.1		py36_0	141 KB	conda-fo
rge libprotobuf-3.5.2		he51fdeb_1	105.2 MB	conda-fo
rge mako-1.0.7		py_1	57 KB	conda-fo
rge idna-2.7		py36_2	131 KB	conda-fo
rge pysocks-1.6.8		py36_1	23 KB	conda-fo
rge freetype-2.8.1		ha63716d_1	468 KB	conda-fo

Total: 408.0 MB

The following NEW packages will be INSTALLED:

absl-py:	0.3.0-py_0	conda-forge
asn1crypto:	0.24.0-py_1	conda-forge
astor:	0.7.1-py_0	conda-forge
ca-certificates:	2018.4.16-0	conda-forge
cffi:	1.11.5-py36hfa6e2cd_1	conda-forge
chardet:	3.0.4-py36_3	conda-forge
cryptography:	2.3-py36h74b6da3_0	conda-forge
cryptography-vectors:	2.3-py36_1	conda-forge
freetype:	2.8.1-ha63716d_1	conda-forge
gast:	0.2.0-py_0	conda-forge
grpcio:	1.12.1-py36h1a1b453_0	
h5py:	2.8.0-py36hb24199d_1	conda-forge
hdf5:	1.10.2-hbc3b0e7_1	conda-forge
icc_rt:	2017.0.4-h97af966_0	
idna:	2.7-py36_2	conda-forge
intel-openmp:	2018.0.3-0	
jpeg:	9c-hfa6e2cd_0	conda-forge
keras:	2.1.6-py36_0	conda-forge
libgpuarray:	0.7.6-hfa6e2cd_3	conda-forge
libpng:	1.6.35-h7602738_0	conda-forge
libprotobuf:	3.5.2-he51fdeb_1	conda-forge
libtiff:	4.0.9-hf1753bf_1	conda-forge
mako:	1.0.7-py_1	conda-forge
markdown:	2.6.11-py_0	conda-forge
markupsafe:	1.0-py36_0	conda-forge
mkl:	2018.0.3-1	
mkl_fft:	1.0.5-py36_0	conda-forge
mkl_random:	1.0.1-py36_0	conda-forge
numpy:	1.14.3-py36h9fa60d3_2	
numpy-base:	1.14.3-py36h5c71026_0	
olefile:	0.45.1-py_1	conda-forge
openssl:	1.0.2o-hfa6e2cd_1	conda-forge
pillow:	5.2.0-py36_0	conda-forge
protobuf:	3.5.2-py36he51fdeb_0	conda-forge
pycparser:	2.18-py_1	conda-forge
pygpu:	0.7.6-py36_0	conda-forge
pyopenssl:	18.0.0-py36_0	conda-forge
pyreadline:	2.1-py36_0	conda-forge
pysocks:	1.6.8-py36_1	conda-forge
pyyaml:	3.12-py36_1	conda-forge
requests:	2.19.1-py36_1	conda-forge
scipy:	1.1.0-py36h672f292_0	
six:	1.11.0-py36_1	conda-forge
tensorboard:	1.9.0-py36_0	conda-forge
tensorflow:	1.9.0-py36_0	conda-forge
tensorflow-hub:	0.1.1-py_0	conda-forge
termcolor:	1.1.0-py_2	conda-forge
theano:	1.0.2-py36_0	conda-forge
tk:	8.6.7-hcb92d03_3	
urllib3:	1.23-py36_1	conda-forge
werkzeug:	0.14.1-py_0	conda-forge
win_inet_pton:	1.0.1-py36_1	conda-forge
yaml:	0.1.7-hfa6e2cd_1	conda-forge
zlib:	1.2.11-h2fa13f4_3	conda-forge

The following packages will be UPDATED:

certifi:	2018.4.16-py36_0	--> 2018.4.16-
py36_0 conda-forge		

Downloading and Extracting Packages

certifi-2018.4.16	143 KB ##### 100%
jpeg-9c	314 KB ##### 100%
markupsafe-1.0	26 KB ##### 100%

mkl-2018.0.3	178.1 MB	#####	100%
protobuf-3.5.2	511 KB	#####	100%
abs1-py-0.3.0	76 KB	#####	100%
tensorflow-hub-0.1.1	39 KB	#####	100%
numpy-base-1.14.3	3.8 MB	#####	100%
urllib3-1.23	153 KB	#####	100%
termcolor-1.1.0	6 KB	#####	100%
theano-1.0.2	3.7 MB	#####	100%
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zlib-1.2.11	235 KB	#####	100%
werkzeug-0.14.1	249 KB	#####	100%
pyyaml-3.12	132 KB	#####	100%
astor-0.7.1	22 KB	#####	100%
win_inet_pton-1.0.1	5 KB	#####	100%
gast-0.2.0	9 KB	#####	100%
libpng-1.6.35	1.3 MB	#####	100%
cryptography-2.3	505 KB	#####	100%
pycparser-2.18	84 KB	#####	100%
six-1.11.0	21 KB	#####	100%
markdown-2.6.11	56 KB	#####	100%
numpy-1.14.3	42 KB	#####	100%
h5py-2.8.0	833 KB	#####	100%
tensorboard-1.9.0	3.3 MB	#####	100%
libtiff-4.0.9	828 KB	#####	100%
pillow-5.2.0	771 KB	#####	100%
requests-2.19.1	94 KB	#####	100%
libgpuarray-0.7.6	314 KB	#####	100%
tensorflow-1.9.0	31.7 MB	#####	100%
openssl-1.0.2o	5.4 MB	#####	100%
asn1crypto-0.24.0	72 KB	#####	100%
hdf5-1.10.2	34.8 MB	#####	100%
mkl_random-1.0.1	267 KB	#####	100%
keras-2.1.6	500 KB	#####	100%
yaml-0.1.7	221 KB	#####	100%
intel-openmp-2018.0.	1.7 MB	#####	100%
pygpu-0.7.6	582 KB	#####	100%
cffi-1.11.5	211 KB	#####	100%
ca-certificates-2018	176 KB	#####	100%
chardet-3.0.4	209 KB	#####	100%
olefile-0.45.1	30 KB	#####	100%
pyopenssl-18.0.0	80 KB	#####	100%
mkl_fft-1.0.5	120 KB	#####	100%
pyreadline-2.1	141 KB	#####	100%
libprotobuf-3.5.2	105.2 MB	#####	100%
mako-1.0.7	57 KB	#####	100%
idna-2.7	131 KB	#####	100%
pysocks-1.6.8	23 KB	#####	100%
freetype-2.8.1	468 KB	#####	100%
Preparing transaction:	...working...	done	
Verifying transaction:	...working...	done	
Executing transaction:	...working...	done	

Installation complete.

```
> model %>% fit(train_x, train_y, epochs = 100, batch_size = 128)
2018-08-08 23:38:56.532012: I T:\src\github\tensorflow\tensorflow\core\pla
tform\cpu_feature_guard.cc:141] Your CPU supports instructions that this T
ensorFlow binary was not compiled to use: AVX2
Epoch 1/100
60000/60000 [=====] - 10s 161us/step - loss: 0.28
17 - acc: 0.9183
Epoch 2/100
60000/60000 [=====] - 10s 165us/step - loss: 0.12
43 - acc: 0.9639
Epoch 3/100
60000/60000 [=====] - 10s 163us/step - loss: 0.08
89 - acc: 0.9732
Epoch 4/100
```

60000/60000 [=====] - 10s 162us/step - loss: 0.06
96 - acc: 0.9783
Epoch 5/100
60000/60000 [=====] - 10s 164us/step - loss: 0.05
74 - acc: 0.9828
Epoch 6/100
60000/60000 [=====] - 10s 163us/step - loss: 0.04
83 - acc: 0.9844
Epoch 7/100
60000/60000 [=====] - 10s 168us/step - loss: 0.04
27 - acc: 0.9866
Epoch 8/100
60000/60000 [=====] - 10s 172us/step - loss: 0.03
68 - acc: 0.9884
Epoch 9/100
60000/60000 [=====] - 10s 167us/step - loss: 0.03
19 - acc: 0.9896
Epoch 10/100
60000/60000 [=====] - 10s 166us/step - loss: 0.02
98 - acc: 0.9901
Epoch 11/100
60000/60000 [=====] - 10s 165us/step - loss: 0.02
77 - acc: 0.9908
Epoch 12/100
60000/60000 [=====] - 11s 179us/step - loss: 0.02
30 - acc: 0.9923
Epoch 13/100
60000/60000 [=====] - 11s 179us/step - loss: 0.02
21 - acc: 0.9923
Epoch 14/100
60000/60000 [=====] - 10s 160us/step - loss: 0.02
07 - acc: 0.9930
Epoch 15/100
60000/60000 [=====] - 9s 150us/step - loss: 0.019
9 - acc: 0.9933
Epoch 16/100
60000/60000 [=====] - 10s 162us/step - loss: 0.01
93 - acc: 0.9936
Epoch 17/100
60000/60000 [=====] - 10s 161us/step - loss: 0.01
56 - acc: 0.9949
Epoch 18/100
60000/60000 [=====] - 10s 158us/step - loss: 0.01
75 - acc: 0.9938
Epoch 19/100
60000/60000 [=====] - 10s 171us/step - loss: 0.01
57 - acc: 0.9949
Epoch 20/100
60000/60000 [=====] - 10s 158us/step - loss: 0.01
64 - acc: 0.9946
Epoch 21/100
60000/60000 [=====] - 9s 154us/step - loss: 0.013
3 - acc: 0.9957
Epoch 22/100
60000/60000 [=====] - 9s 154us/step - loss: 0.014
0 - acc: 0.9953
Epoch 23/100
60000/60000 [=====] - 10s 161us/step - loss: 0.01
33 - acc: 0.9954
Epoch 24/100
60000/60000 [=====] - 10s 159us/step - loss: 0.01
27 - acc: 0.9956
Epoch 25/100
60000/60000 [=====] - 10s 168us/step - loss: 0.01
15 - acc: 0.9959
Epoch 26/100
60000/60000 [=====] - 10s 160us/step - loss: 0.01
18 - acc: 0.9960
Epoch 27/100

60000/60000 [=====] - 11s 176us/step - loss: 0.01
28 - acc: 0.9956
Epoch 28/100
60000/60000 [=====] - 10s 166us/step - loss: 0.01
24 - acc: 0.9958
Epoch 29/100
60000/60000 [=====] - 11s 176us/step - loss: 0.01
19 - acc: 0.9960
Epoch 30/100
60000/60000 [=====] - 11s 184us/step - loss: 0.01
06 - acc: 0.9962
Epoch 31/100
60000/60000 [=====] - 10s 166us/step - loss: 0.01
00 - acc: 0.9963
Epoch 32/100
60000/60000 [=====] - 10s 165us/step - loss: 0.00
91 - acc: 0.9969
Epoch 33/100
60000/60000 [=====] - 10s 168us/step - loss: 0.01
01 - acc: 0.9965
Epoch 34/100
60000/60000 [=====] - 10s 167us/step - loss: 0.01
00 - acc: 0.9965
Epoch 35/100
60000/60000 [=====] - 10s 162us/step - loss: 0.01
01 - acc: 0.9966
Epoch 36/100
60000/60000 [=====] - 10s 162us/step - loss: 0.01
01 - acc: 0.9964
Epoch 37/100
60000/60000 [=====] - 10s 163us/step - loss: 0.00
83 - acc: 0.9972
Epoch 38/100
60000/60000 [=====] - 10s 162us/step - loss: 0.00
86 - acc: 0.9971
Epoch 39/100
60000/60000 [=====] - 10s 162us/step - loss: 0.00
91 - acc: 0.9967
Epoch 40/100
60000/60000 [=====] - 10s 163us/step - loss: 0.00
94 - acc: 0.9969
Epoch 41/100
60000/60000 [=====] - 10s 166us/step - loss: 0.01
07 - acc: 0.9965
Epoch 42/100
60000/60000 [=====] - 10s 163us/step - loss: 0.00
84 - acc: 0.9970
Epoch 43/100
60000/60000 [=====] - 10s 162us/step - loss: 0.00
81 - acc: 0.9972
Epoch 44/100
60000/60000 [=====] - 10s 164us/step - loss: 0.01
00 - acc: 0.9967
Epoch 45/100
60000/60000 [=====] - 10s 162us/step - loss: 0.00
79 - acc: 0.9973
Epoch 46/100
60000/60000 [=====] - 10s 163us/step - loss: 0.00
94 - acc: 0.9968
Epoch 47/100
60000/60000 [=====] - 10s 162us/step - loss: 0.00
90 - acc: 0.9969
Epoch 48/100
60000/60000 [=====] - 10s 164us/step - loss: 0.00
72 - acc: 0.9977
Epoch 49/100
60000/60000 [=====] - 10s 161us/step - loss: 0.00
77 - acc: 0.9975
Epoch 50/100

60000/60000 [=====] - 10s 160us/step - loss: 0.00
79 - acc: 0.9971
Epoch 51/100
60000/60000 [=====] - 10s 162us/step - loss: 0.00
81 - acc: 0.9972
Epoch 52/100
60000/60000 [=====] - 10s 163us/step - loss: 0.00
49 - acc: 0.9983
Epoch 53/100
60000/60000 [=====] - 10s 160us/step - loss: 0.00
63 - acc: 0.9979
Epoch 54/100
60000/60000 [=====] - 10s 162us/step - loss: 0.00
95 - acc: 0.9970
Epoch 55/100
60000/60000 [=====] - 10s 161us/step - loss: 0.00
74 - acc: 0.9975
Epoch 56/100
60000/60000 [=====] - 10s 159us/step - loss: 0.00
87 - acc: 0.9970
Epoch 57/100
60000/60000 [=====] - 10s 160us/step - loss: 0.00
59 - acc: 0.9978
Epoch 58/100
60000/60000 [=====] - 10s 160us/step - loss: 0.00
64 - acc: 0.9977
Epoch 59/100
60000/60000 [=====] - 10s 160us/step - loss: 0.00
75 - acc: 0.9975
Epoch 60/100
60000/60000 [=====] - 10s 166us/step - loss: 0.00
84 - acc: 0.9973
Epoch 61/100
60000/60000 [=====] - 10s 160us/step - loss: 0.00
78 - acc: 0.9976
Epoch 62/100
60000/60000 [=====] - 10s 163us/step - loss: 0.00
64 - acc: 0.9979
Epoch 63/100
60000/60000 [=====] - 10s 159us/step - loss: 0.00
82 - acc: 0.9974
Epoch 64/100
60000/60000 [=====] - 10s 160us/step - loss: 0.00
54 - acc: 0.9983
Epoch 65/100
60000/60000 [=====] - 10s 159us/step - loss: 0.00
86 - acc: 0.9974
Epoch 66/100
60000/60000 [=====] - 10s 163us/step - loss: 0.00
78 - acc: 0.9975
Epoch 67/100
60000/60000 [=====] - 10s 160us/step - loss: 0.00
55 - acc: 0.9980
Epoch 68/100
60000/60000 [=====] - 10s 160us/step - loss: 0.00
66 - acc: 0.9977
Epoch 69/100
60000/60000 [=====] - 10s 159us/step - loss: 0.00
65 - acc: 0.9978
Epoch 70/100
60000/60000 [=====] - 10s 161us/step - loss: 0.00
76 - acc: 0.9977
Epoch 71/100
60000/60000 [=====] - 10s 166us/step - loss: 0.00
63 - acc: 0.9978
Epoch 72/100
60000/60000 [=====] - 10s 163us/step - loss: 0.00
57 - acc: 0.9983
Epoch 73/100

60000/60000 [=====] - 10s 161us/step - loss: 0.00
66 - acc: 0.9980
Epoch 74/100
60000/60000 [=====] - 9s 158us/step - loss: 0.007
5 - acc: 0.9979
Epoch 75/100
60000/60000 [=====] - 10s 159us/step - loss: 0.00
75 - acc: 0.9978
Epoch 76/100
60000/60000 [=====] - 10s 161us/step - loss: 0.00
73 - acc: 0.9978
Epoch 77/100
60000/60000 [=====] - 10s 160us/step - loss: 0.00
67 - acc: 0.9980
Epoch 78/100
60000/60000 [=====] - 10s 166us/step - loss: 0.00
53 - acc: 0.9980
Epoch 79/100
60000/60000 [=====] - 10s 162us/step - loss: 0.00
63 - acc: 0.9979
Epoch 80/100
60000/60000 [=====] - 10s 160us/step - loss: 0.00
71 - acc: 0.9977
Epoch 81/100
60000/60000 [=====] - 10s 159us/step - loss: 0.00
60 - acc: 0.9982
Epoch 82/100
60000/60000 [=====] - 10s 162us/step - loss: 0.00
53 - acc: 0.9984
Epoch 83/100
60000/60000 [=====] - 10s 160us/step - loss: 0.00
62 - acc: 0.9978
Epoch 84/100
60000/60000 [=====] - 10s 163us/step - loss: 0.00
64 - acc: 0.9979
Epoch 85/100
60000/60000 [=====] - 10s 159us/step - loss: 0.00
69 - acc: 0.9979
Epoch 86/100
60000/60000 [=====] - 10s 160us/step - loss: 0.00
70 - acc: 0.9979
Epoch 87/100
60000/60000 [=====] - 10s 161us/step - loss: 0.00
69 - acc: 0.9981
Epoch 88/100
60000/60000 [=====] - 10s 160us/step - loss: 0.00
55 - acc: 0.9983
Epoch 89/100
60000/60000 [=====] - 10s 158us/step - loss: 0.00
51 - acc: 0.9983
Epoch 90/100
60000/60000 [=====] - 10s 163us/step - loss: 0.00
53 - acc: 0.9983
Epoch 91/100
60000/60000 [=====] - 10s 159us/step - loss: 0.00
74 - acc: 0.9976
Epoch 92/100
60000/60000 [=====] - 10s 160us/step - loss: 0.00
59 - acc: 0.9983
Epoch 93/100
60000/60000 [=====] - 10s 162us/step - loss: 0.00
50 - acc: 0.9983
Epoch 94/100
60000/60000 [=====] - 10s 161us/step - loss: 0.00
62 - acc: 0.9985
Epoch 95/100
60000/60000 [=====] - 10s 160us/step - loss: 0.00
70 - acc: 0.9978
Epoch 96/100

```

60000/60000 [=====] - 9s 154us/step - loss: 0.005
9 - acc: 0.9980
Epoch 97/100
60000/60000 [=====] - 9s 150us/step - loss: 0.005
4 - acc: 0.9984
Epoch 98/100
60000/60000 [=====] - 9s 149us/step - loss: 0.005
9 - acc: 0.9982
Epoch 99/100
60000/60000 [=====] - 8s 139us/step - loss: 0.005
9 - acc: 0.9981
Epoch 100/100
60000/60000 [=====] - 8s 140us/step - loss: 0.006
7 - acc: 0.9978

```

