

STAT 6340 (Statistical and Machine Learning)
Instructions for Downloading & Viewing CIFAR10 Data
(Based on code contributed by Dipnil Chakraborty and Jeremy Mathews)

First, update R and RStudio.

1. Update R. On a Windows machine, use

```
install.packages("installr")
library(installr)
updateR()
```

On a Mac, simply download and install the latest version of R from CRAN.

2. Update RStudio by using Help > Check for Updates. While you are at it, also update the packages using Tools > Check for Package Updates.

Now, follow one of two approaches.

Approach 1: Download and install `keras` package which contains the CIFAR10 data. The `keras` package is expected to be used later in the course.

1. Try

```
install.packages("keras")
library(keras)
cifar <- dataset_cifar10()
```

or

```
install.packages("devtools")
devtools::install_github("rstudio/keras")
library(keras)
cifar <- dataset_cifar10()
```

If this works, you are done. If it fails asking you to install `miniconda`, enter Y on the prompt.

2. Install `tensorflow`.

```
install.packages("tensorflow")
library(tensorflow)
install_tensorflow()
```

3. Get the data.

```
library(keras)
cifar <- dataset_cifar10()
str(cifar)
```

You may have to restart R a few times during the process.

4. To see an image (e.g., the image # 27001, an airplane, coded as 0),

```
install.packages("imager")
library(imager)
plot(as.cimg(cifar$train$x[27001,,]))
cifar$train$y[27001]
```

The image is a bit blurry and requires a rotation. Why?

Approach 2: Follow instructions at <https://rdr.io/github/jlmelville/snedata/src/R/cifar.R>. It also provides a function to view the images. Copy and paste the functions in file `cifar.R`. To download the data and view, e.g., the image #27001 in the training set, use

```
source("cifar.R")
cifar2 <- download_cifar10()
str(cifar2)
show_cifar(cifar2, 27001, interpolate = T)
cifar2[27001, 3073:3074]
```

Explore how the two datasets compare. How can you get one from the other?