Twitter client for R

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1 Disclaimer

Because vignettes are built at various points of time (often automatically), and because a lot of the examples are pulling live data from Twitter at the time of being built, it is possible that some of the content in the examples of this document will be unsavory. I've tried to use users and feeds that are unlikely to be this way, but particularly when looking at the public timeline all bets are off.

2 Introduction

Twitter is a popular service that allows users to broadcast short messages ('*tweets*') for others to read. These can be used to communicate wtih friends, to display headlines, for restaurants to list daily specials, and more. The *twitteR* package is intended to provide access to the Twitter API within R. Users can make access large amounts of Twitter data for data mining and other tasks.

When joined with the *ROauth* package, this package can be used to push the API further and directly interact by posting tweets, dealing with direct messages and enjoying enhanced API rate limitations.

3 Initial Notes

3.1 Notes for this version

The reworking is still underway. This version brings some bug fixes, an easier mechanism to convert from the returned object lists to data.frames, and support for the Twitter trends API.

3.2 Notes on API coverage

The ultimate goal is to provide full coverage of the Twitter API, although this is not currently the case. Aspects of the API will be added over time, although if there are particular places that you find missing, please contact me.

3.3 Notes on the classes

There are four classes in this package: `user`, `status`, `trend`, and `directMessage`. As of this version they have all been implemented as reference classes (see `setRefClass`). The first two were previously implemented as S4 classes. To help maintain backwards compatibility, the S4 methods (all accessors) have been left in for those two classes although new code should be using the new style accessors.

4 Getting Started

We'll focus first on those sections of the package that do not require `ROAuth` authentication. The rest of this document won't be an encyclopedic report on the functionality of the package but will just show some basic techniques.

```
> library(twitteR)
```

5 Exploring Twitter

A Twitter *timeline* is simply a stream of tweets - this might be the *public timeline* which is comprised of all public tweets, it might be a user's timeline which would be all of their tweets, or it might even be a timeline to look at one's friend's tweets. Just as there are various *timelines* in Twitter, the *twitteR* package provides various interfaces to access them. The first and most obvious would be the *public timeline*, which retrieves the 20 most recent public tweets on Twitter, returned to the user as a list of *status* objects.

```
> publicTweets <- publicTimeline()
> length(publicTweets)

[1] 20

> publicTweets[1:5]

[[1]]
[1] "_CatDaMac: Ive been layinn on myy backk all dayy !! Im Lazyy ."

[[2]]
[1] "BennnyBoom: So much music to listen too.. What am I gonna do?!!!!!! O_O"

[[3]]
[1] "Noah_GQ: dont belive the lies"

[[4]]
[1] "VinieMonteiro21: GO TO WORK NOOOW !"
```

```
[[5]]
[1] "biankauch_: Vei, cansei, chega desse putaria de intriguinhas aqui e ali, nao  d\xe1"
```

```
> publicTweets[[1]]$getScreenName()
```

```
[1] "_CatDaMac"
```

```
> publicTweets[[1]]$getCreated()
```

```
[1] "2011-06-14 22:42:59 UTC"
```

```
> publicTweets[[1]]$getText()
```

```
[1] "Ive been layinn on myy backk all dayy !! Im Lazyy ."
```

Similarly, we can look at a particular user's timeline. This will only work properly if that user has a public account or you are authenticated and have access to that account, and can take either a user's name or an object of class *user* (more on this later). For this example, let's use the user *cranatic*.

```
> cranTweets <- userTimeline("cranatic")
> cranTweets[1:5]
```

```
[[1]]
[1] "cranatic: Update: CITAN, coxme, dclone, dynaTree, FAwR, mefa, mefa4, memisc, mosaic, nl

[[2]]
[1] "cranatic: New: bsml. http://bit.ly/k5mVN2 #rstats"

[[3]]
[1] "cranatic: Update: diversitree, gtcorr, raster, RgoogleMaps, tileHMM, tm.plugin.dc, WGCN

[[4]]
[1] "cranatic: Update: DoE.wrapper, Epi, GeneReg, R2Cuba, SubpathwayMiner. http://bit.ly/90f

[[5]]
[1] "cranatic: Update: GenABEL, MIfuns, MIfuns, OrdFacReg, PairViz, RExcelInstaller, SPOT. h
```

By default this command returns the 20 most recent tweet. As with most (but not all) of the functions, it also provides a mechanism to retrieve an arbitrarily large number of tweets up to limits set by the Twitter API, which vary based on the specific type of request. (warning: At least as of now there is no protection from overloading the API rate limit so be reasonable with your requests).

```
> cranTweetsLarge <- userTimeline("cranatic", n = 100)
> length(cranTweetsLarge)
```

```
[1] 100
```

5.1 Searching Twitter

The `searchTwitter` function can be used to search for tweets that match a desired term. Example searches are such things as hashtags, basic boolean logic such as AND and OR. The `n` argument can be used to specify the number of tweets to return, defaulting to 25.

```
> sea <- searchTwitter("#twitter", n = 50)
> sea[1:5]

[[1]]
[1] "KimAnnCarter: If you just want another #follow, please #follow my other #twitter acct &

[[2]]
[1] "iEatLesbians: I just installed the new Twidroyd for #Twitter on my #Android #Phone - It

[[3]]
[1] "BodyMarkdUpp: #Twitter Gang Gang!"

[[4]]
[1] "sandramrchn: Oj\xfa oj\xfa, vaya las COSAS (ni personas \xac\xac) que te encuentras en

[[5]]
[1] "madformobility: RT @liz_baillie: @sunriseon7 clearly the commentators don't get the new
```

5.2 Looking at users

To take a closer look at a Twitter user (including yourself!), run the command `getUser`. This will only work correctly with users who have their profiles public, or if you're authenticated and granted access.

```
> crantastic <- getUser("crantastic")
> crantastic

[1] "Crantastic"
```

5.3 Trends

Twitter keeps track of topics that are popular at any given point of time, and allows one to extract that data. We're able to get the 10 currently trending topics, see the 20 trending topics per hour for a given day, or the 30 trending topics per day for a given week.

```
> curTrends <- getTrends("current")
> curTrends[1:2]

[[1]]
[1] "#imhappiestwhen"
```

```
[[2]]
[1] "#bigmistake"
```

```
> yesterdayTrends <- getTrends("daily", date = as.character(Sys.Date() -
+     1))
> length(yesterdayTrends)
```

```
[1] 480
```

```
> lastWeekTrends <- getTrends("weekly", date = as.character(Sys.Date() -
+     7))
> length(lastWeekTrends)
```

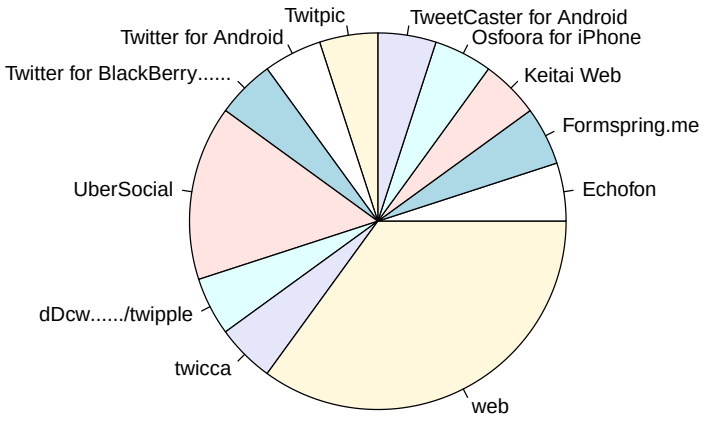
```
[1] 210
```

5.4 A simple example

Just a quick example of how one can interact with actual data. Here we will pull the most recent results from the public timeline and see the clients that were used to post those statuses. We can look at a pie chart to get a sense for the most common clients.

Note that sources which are not the standard web interface will be presented as an anchored URL string (<A>...</A>). There are more efficient means to rip out the anchor string than how it is done below, but this is a bit more robust for the purposes of this vignette due to issues with character encoding, locales, etc.

```
> sources <- sapply(publicTweets, function(x) x$getStatusSource())
> sources <- gsub("</a>", "", sources)
> sources <- strsplit(sources, ">")
> sources <- sapply(sources, function(x) ifelse(length(x) > 1,
+     x[2], x[1]))
> pie(table(sources))
```



5.5 Conversion to data.frames

While still not as convenient as it should be, there is a new mechanism to assist with the process of converting the object lists returned by many functions in the *twitteR* package into a `data.frame` structure. To do this, every object of every class has a reference method `toDataFrame` as well as a corresponding S4 method `as.data.frame` that works in the traditional sense. Converting a single object will typically not be particularly useful by itself, but it does enable the currently kludgey mechanism for whole list conversion, such as using the `publicTweets` variable we had earlier:

```
> df <- do.call("rbind", lapply(publicTweets, as.data.frame))
> dim(df)

[1] 20 10
```

What we're doing here is calling `lapply` on all of the *status* objects stored in the `publicTweets` list, and calling their `as.data.frame` method. These are combined by row using `do.call`.

6 Authentication with OAuth

OAuth is an authentication mechanism gaining popularity which allows applications to provide client functionality to a web service without granting an end user's credentials to the client itself. This causes a few wrinkles for cases like ours, where we're accessing Twitter programatically. The *ROAuth* package can be used to get around this issue.

The first step is to create a Twitter application for yourself. Go to `https://twitter.com/apps/new`. Set the "Application Type" as "Client", and "Default Access Type" as "Read & Write". This will provide you with two strings, a consumer key and a consumer secret. Record these for your future use.

Three other pieces of information you will need:

- *requestURL:* `https://api.twitter.com/oauth/request_token`
- accessURL: `http://api.twitter.com/oauth/access_token`
- *authURL:* `http://api.twitter.com/oauth/authorize`

In your R session, you'll want to do the following:

```
> cred <- OAuthFactory$new(consumerKey = YOURKEY, consumerSecret = YOURSECRET,
+     requestURL = requestURL, accessURL = accessURL, authURL = authURL)
> cred$handshake()
```

At this point, you'll be prompted with another URL, go to that URL with your browser and you'll be asked to approve the connection for this application. Once you do this, you'll be presented with a PIN, enter that into your R session. Your object is now verified.

The `OAuth` object, once the handshake is complete, can be saved to a file and reused. You should not ever have to redo the handshake unless you remove authorization within the Twitter website.

7 Session Information

The version number of R and packages loaded for generating the vignette were:

```
R version 2.13.0 (2011-04-13)
Platform: x86_64-unknown-linux-gnu (64-bit)

locale:
 [1] LC_CTYPE=en_US.UTF-8       LC_NUMERIC=C
 [3] LC_TIME=en_US.UTF-8        LC_COLLATE=C
 [5] LC_MONETARY=C              LC_MESSAGES=en_US.UTF-8
 [7] LC_PAPER=en_US.UTF-8       LC_NAME=C
 [9] LC_ADDRESS=C               LC_TELEPHONE=C
[11] LC_MEASUREMENT=en_US.UTF-8 LC_IDENTIFICATION=C
```

```
attached base packages:
[1] stats     graphics  grDevices utils     datasets  methods   base

other attached packages:
[1] twitteR_0.99.9 RJSONIO_0.5-0  RCurl_1.6-5    bitops_1.0-4.1

loaded via a namespace (and not attached):
[1] tools_2.13.0
```