Reading data from the web

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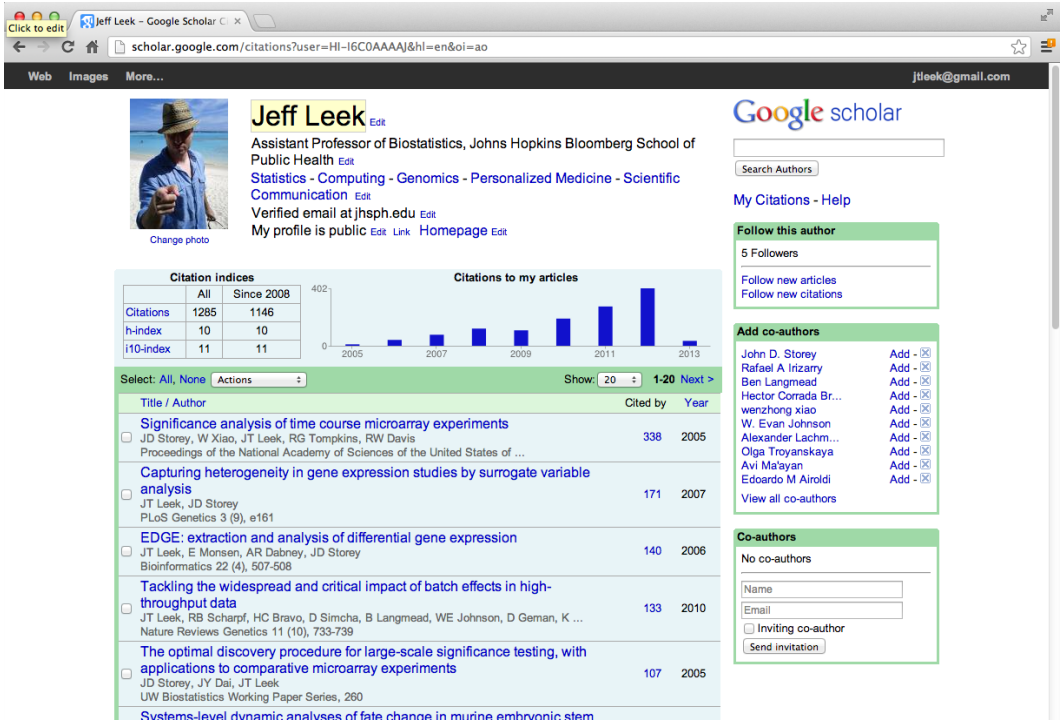
Webscraping

Webscraping: Programatically extracting data from the HTML code of websites.

- It can be a great way to get data How Netflix reverse engineered Hollywood
- Many websites have information you may want to programaticaly read
- In some cases this is against the terms of service for the website
- Attempting to read too many pages too quickly can get your IP address blocked

http://en.wikipedia.org/wiki/Web_scraping

Example: Google scholar



http://scholar.google.com/citations?user=HI-I6C0AAAAJ&hl=en

Getting data off webpages - readLines()

```
con = url("http://scholar.google.com/citations?user=HI-I6C0AAAAJ&hl=en")
htmlCode = readLines(con)
close(con)
htmlCode
```

```
[1] "<!DOCTYPE html><html><head><title>Jeff Leek - Google Scholar Citations</title><meta name=\"robots\
```

Parsing with XML

```
library(XML)
url <- "http://scholar.google.com/citations?user=HI-I6C0AAAAJ&hl=en"
html <- htmlTreeParse(url, useInternalNodes=T)

xpathSApply(html, "//title", xmlValue)
```

```
[1] "Jeff Leek - Google Scholar Citations"
```

```
xpathSApply(html, "//td[@id='col-citedby']", xmlValue)
```

```
 [1] "Cited by" "397"      "259"      "237"      "172"      "138"      "125"      "122"
 [9] "109"      "101"      "34"       "26"       "26"       "24"       "19"       "13"
[17] "12"       "10"       "10"       "7"        "6"
```

GET from the httr package

```
library(httr); html2 = GET(url)
content2 = content(html2,as="text")
parsedHtml = htmlParse(content2,asText=TRUE)
xpathSApply(parsedHtml, "//title", xmlValue)
```


```
[1] "Jeff Leek - Google Scholar Citations"
```

Accessing websites with passwords

```
pg1 = GET("http://httpbin.org/basic-auth/user/passwd")
pg1
```

```
Response [http://httpbin.org/basic-auth/user/passwd]
  Status: 401
  Content-type:
```

http://cran.r-project.org/web/packages/httr/httr.pdf

Accessing websites with passwords

```
pg2 = GET("http://httpbin.org/basic-auth/user/passwd",
    authenticate("user","passwd"))
pg2
```

```
Response [http://httpbin.org/basic-auth/user/passwd]
  Status: 200
  Content-type: application/json
{
  "authenticated": true,
  "user": "user"
}
```

```
names(pg2)
```

```
[1] "url"         "handle"      "status_code" "headers"     "cookies"     "content"
[7] "times"       "config"
```

Using handles

```
google = handle("http://google.com")
pg1 = GET(handle=google,path="/")
pg2 = GET(handle=google,path="search")
```

http://cran.r-project.org/web/packages/httr/httr.pdf

Notes and further resources

- R Bloggers has a number of examples of web scraping http://www.r-bloggers.com/?s=Web+Scraping
- The httr help file has useful examples http://cran.r-project.org/web/packages/httr/httr.pdf
- See later lectures on APIs