Smacof Speedup on Windows 10 and Linux

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Introduction

Below, we time the new version of smacof on:

1. HP Probook 450 G6 portable with Intel Core i7-8565U CPU at 1.80 GHz, with 16.0 GB RAM running R 4.3.1 on 64-bit Windows 10 Pro.
2. Linux cluster with 16-core E5-2630 systems: 2 x Intel Xeon E5-2630 v3 @ 2.40GHz (8-core) 128 GB RAM.

Timing new smacof on Windows 10

```
source("C:/Graffel/R/MDS/mdsStruct-main/mdsStruct-main/rcode/smacofR.R")
dyn.load("C:/Graffel/R/MDS/mdsStruct-main/mdsStruct-main/ccode/smacofEngine.dll")
source("C:/Graffel/R/MDS/mdsStruct-main/mdsStruct-main/rcode/smacofRC.R")
source("C:/Graffel/R/MDS/mdsStruct-main/mdsStruct-main/rcode/trianToSDC.R")
source("C:/Graffel/R/MDS/mdsStruct-main/mdsStruct-main/timing/timer.R")


library("smacof")


## Loading required package: plotrix


## Loading required package: colorspace


## Loading required package: e1071


##
## Attaching package: 'smacof'


## The following object is masked _by_ '.GlobalEnv':
##
##     torgerson


## The following object is masked from 'package:base':
##
```

```
##     transform
```

```
library("microbenchmark")
print("EKMAN", quote = FALSE)
```

```
## [1] EKMAN
```

```
source("C:/Graffel/R/MDS/mdsStruct-main/mdsStruct-main/data/ekman.R")
timer(ekmanR, ekmanRC)
```

```
## ************************************************************************
## R  itel    32 0.005512405967979
## RC itel    32 0.005512405967979
##
## R median time  4083450 R median time  316400 R/RC ratio   12.9059734513
## ************************************************************************
```

```
print("MORSE", quote = FALSE)
```

```
## [1] MORSE
```

```
source("C:/Graffel/R/MDS/mdsStruct-main/mdsStruct-main/data/morse.R")
timer(morseR, morseRC)
```

```
## ************************************************************************
## R  itel   859 0.176067994830412
## RC itel   653 0.044974600682946
##
## R median time  156989900 R median time  13265300 R/RC ratio   11.8346286929
## ************************************************************************
```

```
print("AIRLINE", quote = FALSE)
```

```
## [1] AIRLINE
```

```
source("C:/Graffel/R/MDS/mdsStruct-main/mdsStruct-main/data/airline.R")
timer(airlineR, airlineRC)
```

```
## ************************************************************************
## R  itel   309 0.009889936720254
## RC itel   309 0.009889936720254
##
## R median time  29513900 R median time  1576750 R/RC ratio   18.7181861424
## ************************************************************************
```

```
print("WISH", quote = FALSE)
```

```
## [1] WISH
```

```
source("C:/Graffel/R/MDS/mdsStruct-main/mdsStruct-main/data/wish.R")
timer(wishR, wishRC)
```

```
## ************************************************************************
## R  itel   438 0.029063762467695
## RC itel   438 0.029063762467695
##
## R median time  35596050 R median time  970200 R/RC ratio   36.6893939394
## ************************************************************************
```

```
print("GRUIJTER", quote = FALSE)
```

```
## [1] GRUIJTER
```

```
source("C:/Graffel/R/MDS/mdsStruct-main/mdsStruct-main/data/gruijter.R")
timer(gruijterR, gruijterRC)
```

```
## ************************************************************************
## R  itel  1151 0.022301691293285
## RC itel  1151 0.022301691293285
##
## R median time  92943150 R median time  1393150 R/RC ratio   66.7143882568
## ************************************************************************
```

```
print("EQDIST", quote = FALSE)
```

```
## [1] EQDIST
```

```
source("C:/Graffel/R/MDS/mdsStruct-main/mdsStruct-main/data/eqdist.R")
timer(eqdistR, eqdistRC)
```

```
## ************************************************************************
## R  itel  10000 0.065534638209008
## RC itel  10000             NaN
##
## R median time  1002552550 R median time  27387550 R/RC ratio   36.6061422070
## ************************************************************************
```

Timing new smacof on Linux cluster

```
> print("EKMAN", quote = FALSE)
[1] EKMAN
> source(paste(basedir,"data/ekman.R",sep=""))
> timer(ekmanR, ekmanRC)
**************************************************************************
R  itel    32 0.005512405967979
RC itel    32 0.005512405967979

R median time  4499676 R median time  436170 R/RC ratio   10.3163246941
**************************************************************************



> print("MORSE", quote = FALSE)
[1] MORSE
> source(paste(basedir,"data/morse.R",sep=""))
> timer(morseR, morseRC)
**************************************************************************
R  itel   859 0.176067994830412
RC itel   653 0.044974600682946

R median time  120512513 R median time  16006936 R/RC ratio    7.5287685766
**************************************************************************



> print("AIRLINE", quote = FALSE)
[1] AIRLINE
> source(paste(basedir,"data/airline.R",sep=""))
> timer(airlineR, airlineRC)
**************************************************************************
R  itel   309 0.009889936720254
RC itel   309 0.009889936720254

R median time  31867498 R median time  1965884 R/RC ratio   16.2102639322
**************************************************************************



> print("WISH", quote = FALSE)
[1] WISH
> source(paste(basedir,"data/wish.R",sep=""))
> timer(wishR, wishRC)
**************************************************************************
R  itel   438 0.029063762467695
RC itel   438 0.029063762467695

R median time  39758752 R median time  1114322 R/RC ratio   35.6797858607
**************************************************************************



> print("GRUIJTER", quote = FALSE)
[1] GRUIJTER
```

```
> source(paste(basedir,"data/gruijter.R",sep=""))
> timer(gruijterR, gruijterRC)
**************************************************************************
R  itel  1151 0.022301691293285
RC itel  1151 0.022301691293285

R median time  96489894 R median time  1466494 R/RC ratio   65.7962873369
**************************************************************************



> print("EQDIST", quote = FALSE)
[1] EQDIST
> source(paste(basedir,"data/eqdist.R",sep=""))
> timer(eqdistR, eqdistRC)
**************************************************************************
R  itel  10000 0.065615129624485
RC itel  10000              NaN

R median time  903232324 R median time  27055972 R/RC ratio   33.3838437293
**************************************************************************
```