



vlado

Years 1990-2023

```
n <- length(CC)
for(year in 1990:2023){
  M <- matrix(0,nrow=n,ncol=n); rownames(M) <- colnames(M) <- CC
  T <- rep(0,n); names(T) <- CC; G <- rep(0,n); names(G) <- CC
  cat("\nYear =",year,date(),"\n"); flush.console()
  for(cy in CC){
    Q <- paste0("https://api.openalex.org/works?filter=",
      "authorships.countries:",cy,
      ",publication_year:",year,"&group-by=authorships.countries")
    S <- GET(Q)
    C <- fromJSON(rawToChar(S$content))
    D <- C$group_by; T[cy] <- C$meta$count; G[cy] <- C$meta$groups_count
    J <- unname(sapply(D$key,getISO))
    if(length(J)>0){
      V <- D$count; names(V) <- J
      for(j in J) M[cy,j] <- V[j]
    }
  }
  cat("collected",date(),"\n"); flush.console()
  save(T,G,M,file=paste0("Matrix",year,".Rdata"))
  k <- 0; a <- 0; dm <- 0
  for(i in 2:n){
    for(j in 1:(i-1)){
      if(M[i,j]!=M[j,i]) {
        if(min(M[i,j],M[j,i])==0) { m <- max(M[i,j],M[j,i])
          M[i,j] <- M[j,i] <- m; k <- k+1
        } else {a <- a+1; d <- M[i,j]-M[j,i]; dm <- max(abs(d),dm)
          cat(i,j,CC[i],CC[j],M[i,j],M[j,i],d,"\\n")}
      }
    }
  }
  cat("k =",k," a =",a," dmax =",dm,"\\n"); flush.console()
  matrix2net(M,Net=paste0("WorldCo",year,".net"))
}
cat("finished",date(),"\\n"); flush.console()
```

Report

Improvement

The main part of the code we converted into the function `coAuthorship(CC,year)` that was included in `OpenAlex2.R`.

Now the creation of a network collection is short

```
wdir <- "C:/Users/vlado/work/OpenAlex/API"
setwd(wdir)
library(httr)
library(jsonlite)
source("https://raw.githubusercontent.com/bavla/Rnet/master/R/Pajek.R")
source("OpenAlex2.R")

CD <- read.csv2("ISO2codes.csv",head=TRUE,na.strings="--")
CN <- CD$name; CC <- CD$code

# sequence of networks for selected Years
Years <- as.character(1990:2023)
# Years <- c("1991-1995", "1996-2000", "2001-2005", "2006-2010", "2011-2015", "2016-2020")
S <- list()
for(year in Years){
  R <- coAuthorship(CC,year=year)
  S[[year]] <- R
  # save(R,file=paste0("WorldCo",year,".Rdata"))
  matrix2net(R$M,Net=paste0("WorldCo",year,".net"))
  vector2clu(R$G,Clu=paste0("WorldCo",year,"G.clu"))
  vector2vec(R$T,Vec=paste0("WorldCo",year,"T.vec"))
}
save(S,file=paste0("MatrixList.Rdata"))
cat("finished",date(),"\\n"); flush.console()

# complete OpenAlex for all years
R <- coAuthorship(CC)
save(R,file="MatrixComplete.Rdata")
matrix2net(R$M,Net="WorldCoComplete.net")
vector2clu(R$G,Clu="WorldCoComplete.clu")
vector2vec(R$T,Vec="WorldCoComplete.vec")
```

Report

Analyses

- 1-neighbors
- Clustering

- Salton and Jaccard
- Trajectories