OccupationalProfiles_Analysis

Barbara Hofer

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Contents

License

not yet specified

Acknowledgements

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Metadata

Required libraries and runtime environment description.

```r
library("here")
library("dplyr")
library("stringr")
library("DT")
library("data.table")
library("formattable")
library("htmltools")
library("devtools")
library("knitr")
library("formatR")
```

Data

The data used in the analysis are the .csv file named `Profiles_inputdata_180719.csv`. This file has been generated based on occupational profiles that have been contributed by partners of the EO4GEO project. The file contains the duties and tasks with in some cases newly assigned labels of profiles related to Remote sensing and GIS workforce.

```r
#to set the path to the directory where the code resides
here::here("Profile_extendedanalysis_test", "Github_Material_July2019")
```

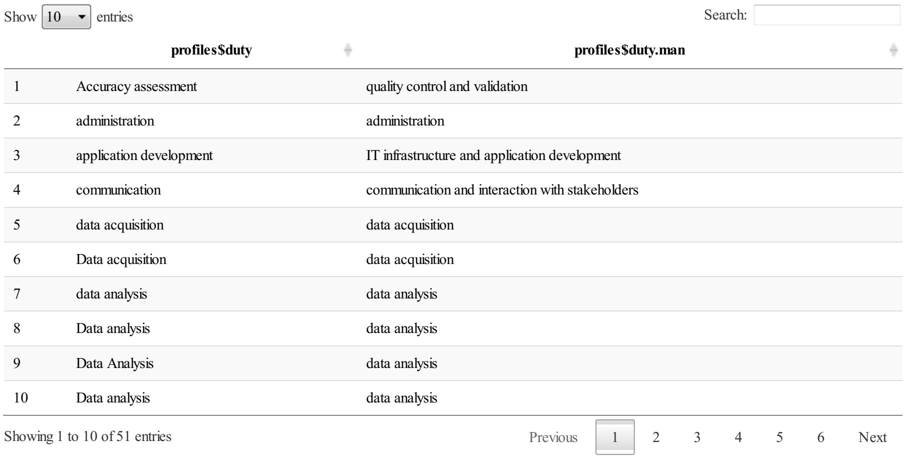
```
## [1] "C:/Owncloud/EO4GEO_project_2018/Profile_extendedanalysis_test/Github_Material_July2019/Profile_e
```

```r
list.files(path='.')
```

```
##  [1] "Duties_skills"
##  [2] "Duties_Task_Renaming"
##  [3] "Duties_trends"
##  [4] "OccupationalProfile_Collection_Instructions"
##  [5] "OccupationalProfiles_Analysis_July2019.html"
##  [6] "OccupationalProfiles_Analysis_July2019.log"
##  [7] "OccupationalProfiles_Analysis_July2019.Rmd"
##  [8] "OccupationalProfiles_Analysis_July2019.tex"
##  [9] "OccupationalProfiles_Analysis_July2019_conflict-20190731-130115.Rmd"
## [10] "Profiles_inputdata_300719.csv"
## [11] "readme.md"
```

```r
profiles <- read.csv2("Profiles_inputdata_300719.csv", header = TRUE, sep =";")

#---
#coherence of strings in the duties and tasks
#this step is only done for the first manipulation of duties and tasks; manual adaptations have been do
#if statement checks, whether the colum of duty.man is empty and executes the code then
#---

if (sum(profiles$duty.man == "") == length(profiles$duty)) {

#for duties: to lower case, ignore everything in brackets, & replace by and, delete white spaces at the
profiles$duty.man <- str_to_lower(profiles$duty, locale = "en")
profiles$duty.man <- str_replace(profiles$duty.man, "\\(.*\\)", "")
profiles$duty.man <- str_replace(profiles$duty.man, "&", "and")
profiles$duty.man <- str_trim(profiles$duty.man)

#for tasks: to lower case, ignore everything in brackets, & replace by and, delete white spaces at the
profiles$task.man <- str_to_lower(profiles$original.task.name, locale = "en")
profiles$task.man <- str_replace(profiles$task.man, "\\(.*\\)", "")
profiles$task.man <- str_replace(profiles$task.man, "&", "and")
profiles$task.man <- str_trim(profiles$task.man)

#write.csv2(profiles, "Profiles_inputdata_manipulated15042019.csv")

}
```

```
## [1] 51
## [1] 19
```



Show 10 entries

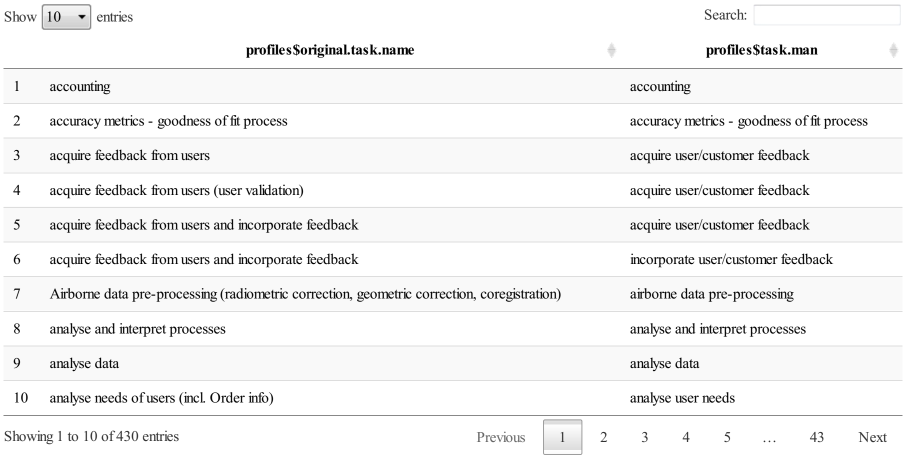
Search:

	profiles$duty	profiles$duty.man
1	Accuracy assessment	quality control and validation
2	administration	administration
3	application development	IT infrastructure and application development
4	communication	communication and interaction with stakeholders
5	data acquisition	data acquisition
6	Data acquisition	data acquisition
7	data analysis	data analysis
8	Data analysis	data analysis
9	Data Analysis	data analysis
10	Data analysis	data analysis

Showing 1 to 10 of 51 entries

```
## [1] 406
```

```
## [1] 295
```



Show 10 entries

Search:

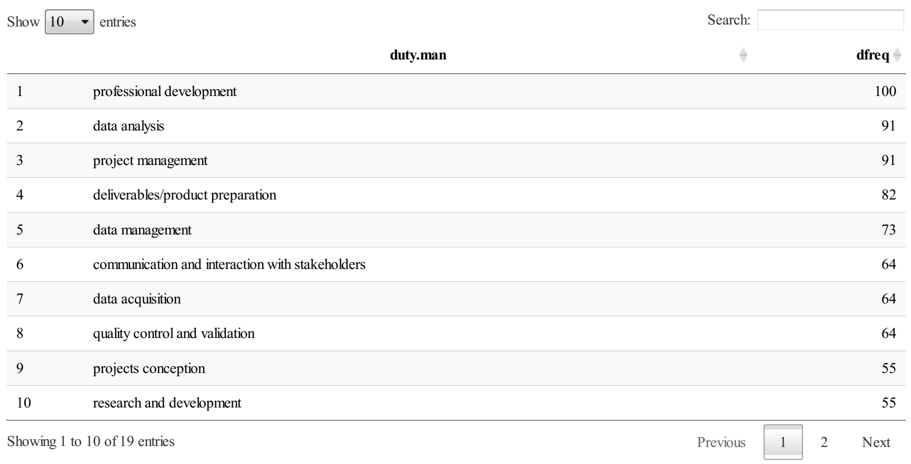
	profiles$original.task.name	profiles$task.man
1	accounting	accounting
2	accuracy metrics - goodness of fit process	accuracy metrics - goodness of fit process
3	acquire feedback from users	acquire user/customer feedback
4	acquire feedback from users (user validation)	acquire user/customer feedback
5	acquire feedback from users and incorporate feedback	acquire user/customer feedback
6	acquire feedback from users and incorporate feedback	incorporate user/customer feedback
7	Airborne data pre-processing (radiometric correction, geometric correction, coregistration)	airborne data pre-processing
8	analyse and interpret processes	analyse and interpret processes
9	analyse data	analyse data
10	analyse needs of users (incl. Order info)	analyse user needs

Showing 1 to 10 of 430 entries

Frequency of duties over the profiles

The frequency of duties is provided in the following table:

```
datatable(oprofiles)
```



	duty.man	dfreq
1	professional development	100
2	data analysis	91
3	project management	91
4	deliverables/product preparation	82
5	data management	73
6	communication and interaction with stakeholders	64
7	data acquisition	64
8	quality control and validation	64
9	projects conception	55
10	research and development	55

Showing 1 to 10 of 19 entries

### Cross section through the profiles per duty In the following, two directories are created and filled with HTML table that include the tasks of single duties. The tasks are thereby either colored according to the indicate skill level that is required or according to trends that were identified. This results in two collections of 19 tables each that provide the main output of this analysis.

```
# I build on the 19 duties and extract tasks for each profile in the original order
# I need the set of duties to iterate over
# in each iteration, I need to identify the profiles containing the duties and select the tasks of the
# then display the tasks according to the given order
dir.create("Duties_skills")
```

```
## Warning in dir.create("Duties_skills"): 'Duties_skills' existiert bereits
```

```
dir.create("Duties_trends")
```

```
## Warning in dir.create("Duties_trends"): 'Duties_trends' existiert bereits
```

```
nduties <- length(unique(profiles$duty.man))

dutylist <- unique(profiles$duty.man)

dutylist <- str_replace(dutylist, "/", "or")
```

```r
profiles$duty.man <- str_replace(profiles$duty.man, "/", "or")

menge <- data.frame()

remove(proftasks)
```

```
## Warning in remove(proftasks): Objekt 'proftasks' nicht gefunden
```

```r
remove(proftasksp)
```

```
## Warning in remove(proftasksp): Objekt 'proftasksp' nicht gefunden
```

```r
remove(proftasksskill)
```

```
## Warning in remove(proftasksskill): Objekt 'proftasksskill' nicht gefunden
```

```r
remove(proftaskstrend)
```

```
## Warning in remove(proftaskstrend): Objekt 'proftaskstrend' nicht gefunden
```

```r
for (d in 1:length(dutylist)) {
  proftasks <- data.frame()
  proftaskstrend <- data.frame()
  proftasksskill <- data.frame()

  menge <- profiles[profiles$duty.man == dutylist[d],]
  menge <- menge[order(menge$profile.source, menge$profile.name, menge$task.order),]

  sourceprof <- menge %>% group_by(menge$profile.source, menge$profile.name) %>% summarize()
  sourceprof <- sourceprof %>% rename("profile.source" = "menge$profile.source")
  sourceprof <- sourceprof %>% rename("profile.name" = "menge$profile.name")

  for (p in 1:nrow(sourceprof)) {

    taskset <- select(menge[menge$profile.name == sourceprof$profile.name[p],], "task.man")
    tasksettrend <- select(menge[menge$profile.name == sourceprof$profile.name[p],], "future.trend")
    tasksetskill <- select(menge[menge$profile.name == sourceprof$profile.name[p],], "skill.level..s.t.

    taskdf <- data.frame(taskset)
    taskdf <- transpose(taskdf)

    taskdft <- data.frame(tasksettrend)
    taskdft <- transpose(taskdft)

    taskdfs <- data.frame(tasksetskill)
    taskdfs <- transpose(taskdfs)


    profilename <- merge(paste(sourceprof$profile.source[p]), paste(sourceprof$profile.name[p]))
    proftasksp <- merge(profilename, taskdf)
    proftasks <- rbindlist(list(proftasks, proftasksp), fill = TRUE)

    proftaskstrend <-  rbindlist(list(proftaskstrend, taskdft), fill = TRUE)

    proftasksskill<-  rbindlist(list(proftasksskill, taskdfs), fill = TRUE)

  }


  #write.csv2(proftasks,paste("Duties_skills/",dutylist[d], ".csv", sep=""), row.names = TRUE)



  #
  #Visualizing skills of tasks resulting in HTML tables
  #
  ntasks <- ncol(proftasks)
  nskills <- ncol(proftasksskill)

  colnames(proftasksskill) <- paste("SV", 1:nskills, sep = "")

  taskvis <- cbind(proftasks, proftasksskill)

  taskvis[is.na(taskvis)] <- "-"


  n=(ncol(taskvis)-2)/2
  #this seems to work for the SV part of the list!
  SVcolumns <- do.call(list, lapply(1:n, function(i){
    return(FALSE)
  }))
  names(SVcolumns) <- paste("SV", 1:n, sep = "")

  Vcolumns <- do.call(list, lapply(1:n, function(i){
    return(formatter("span",
                     style = ~ style("background-color" = ifelse(taskvis[[paste("SV", i, sep="")]] =="s



  }))
  names(Vcolumns) <- paste("V", 1:n, sep = "")

  SVandVformat <- c(SVcolumns, Vcolumns)

  #formattable(taskvis, align=rep("l", n), SVandVformat)


   #format_table provide the html version of the table (otherwise the function is called formattable)
   html_header="
  <head>
  <meta charset=\"utf-8\">
  <meta name=\"viewport\" content=\"width=device-width, initial-scale=1\">
  <link rel=\"stylesheet\" href=\"https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/css/bootstrap.min.css\
  </head>
  <body>
  "
   html_table = format_table(taskvis, align=rep("l", n), SVandVformat)

   write(paste(html_header, html_table, sep=""), paste("Duties_skills/", dutylist[d], ".html", sep=""))

   #
   # Hier brauche ich noch ein paar oder um die Begriffe abzugrenzen und noch weitere Farben
   # und KOntrolle wichtig um zu sehen, ob die Trends richtig eingefärbt werden
   #
   #
   #Visualizing trends of tasks resulting in HTML tables
   #
   ntasks <- ncol(proftasks)
   ntrends <- ncol(proftaskstrend)

   colnames(proftaskstrend) <- paste("SV", 1:ntrends, sep = "")

   taskvistrend <- cbind(proftasks, proftaskstrend)

   taskvistrend[is.na(taskvistrend)] <- "-"


   n=(ncol(taskvistrend)-2)/2
   #this seems to work for the SV part of the list!
   SVcolumns <- do.call(list, lapply(1:n, function(i){
     return(FALSE)
   }))
   names(SVcolumns) <- paste("SV", 1:n, sep = "")

   Vcolumns <- do.call(list, lapply(1:n, function(i){
     return(formatter("span",
                      style = ~ style("background-color" = ifelse(taskvistrend[[paste("SV", i, sep="")]]




   }))
   names(Vcolumns) <- paste("V", 1:n, sep = "")

   SVandVformat <- c(SVcolumns, Vcolumns)

   formattable(taskvis, align=rep("l", n), SVandVformat)


   #format_table provide the html version of the table (otherwise the function is called formattable)
   html_header="
  <!DOCTYPE html>
  <html>
  <head>
  <meta charset=\"utf-8\">
  <meta name=\"viewport\" content=\"width=device-width, initial-scale=1\">
```

```
  <link rel=\"stylesheet\" href=\"https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/css/bootstrap.min.css
  </head>
  <body>
  "
   html_footer= "</html>"

   html_table = format_table(taskvistrend, align=rep("l", n), SVandVformat)

   write(paste(html_header, html_table, html_footer, sep=""), paste("Duties_trends/", dutylist[d], ".htm


  remove(proftasks)
  remove(proftasksp)
}
```