DISCIPLINA: Tópicos Especiais em Gestão e Tecnologia II: Representações distribuídas de texto e modelagem de tópicos - (TGI853 - Turma C)

ATIVIDADE DE AVALIAÇÃO

ALUNA: LETICIA DE CASTRO PEIXOTO

DATA: NOV/2017

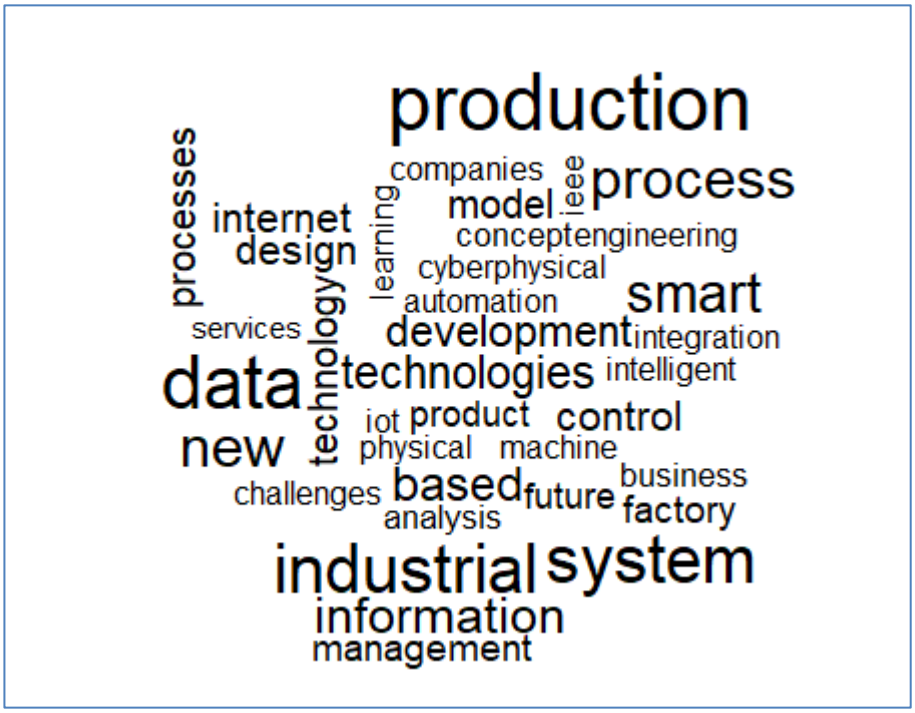
PROFESSOR: RENATO ROCHA

A) CRIANDO NUVEM DE PALAVRAS COM O RESUMO DOS ARTIGOS BAIXADOS DO SCOPUS

Códigos em R

```
#INSTALANDO PACKAGES
install.packages("rvest")
install.packages("dplyr")
install.packages("stringr")
install.packages("wordcloud")
install.packages("tm")
library(wordcloud)
library(tm)
library(rvest)
library(dplyr)
library(stringr)

# INSTALANDO PACKAGES
install.packages("wordcloud")
install.packages("tm")
install.packages("SnowballC")
library(SnowballC)
library(wordcloud)
library(tm)

#ARQUIVO BAIXADO DO SCOPUS SEM SELEÇÃO DE DATAS E COM AS PALAVRAS CHAVES "INDUSTRY 4.0"
setwd ("C:/Users/lecap/Documents/LETICIA/ARQUIVOS LETICIA backup/2
ACADEMICO/DOUTORADO/DISCIPLINAS/RENATO")
df_scopus <- read.csv("scopus1.csv", header=TRUE, sep = ';')
len_abstract <- str_length(df_scopus$Abstract)

# TRATANDO DADOS PARA NUVEM DE PALAVRAS
abstract <-str_trim(df_scopus$Abstract)
abstract <- removePunctuation(abstract )#retirar pontuação
abstract  <- removeNumbers(abstract)#retirar numeros
abstract2 <- tolower(abstract)#passar tudo para lowercase
abstract2 <- removeWords(abstract2, stopwords("en")) #retirar palavras mais usada na lingua pt
abstract2 <-  stripWhitespace(abstract2)# remove espacos restantes
abstract2 <- tolower(abstract2)#passar tudo para lowercase
abstract2 <- tolower(abstract2)
wordcloud(abstract2, max.words = 50)
abstract3 <- removeWords(abstract2, stopwords("en"))

# REMOVE ESPACOS RESTANTES
abstract3 <-  stripWhitespace(abstract3)
wordcloud(abstract3, max.words = 50)
```

#DEFININDO PALAVRAS A SEREM REMOVIDAS
stopwords_en <- c(stopwords("en"),"one", "different", "order", "using", "can", "used", "also", "things", "time", "use" , "will", "approach", "proposed", "research", "about", "results", "work", "paper", "article", "objetive", "shows")
abstract4 <- removeWords(abstract3, stopwords_en)
wordcloud(abstract4, max.words = 40)
#RESULTADO



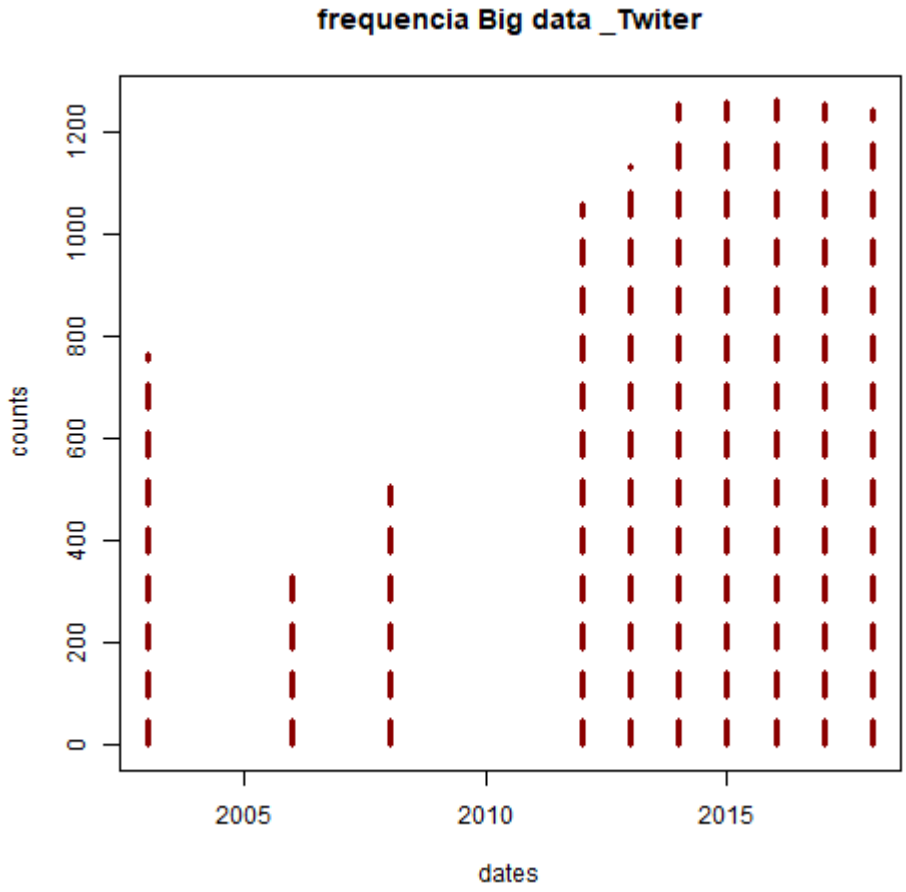
B) PLOTANDO ALGUMAS VISUALIZAÇÕES DA BASE DE DADOS COLETADO NO SCOPUS

Códigos em R
#INSTALANDO PACKAGES
inslall.packages("ggplot2")
library(ggplot2)

#SELECIONANDO OS MAIS CITADOS
citados <- subset (df_scopus, df_scopus$Cited.by > 50)
citados1 <- data.frame (df_scopus$Authors, df_scopus$Cited.by, df_scopus$Source.title, df_scopus$Year)
dates <- df_scopus$Year
counts <- df_scopus$Title

PLOTANDO UM GRAFICO COM AS DATAS EM X E O NUMERO DE ARTIGOS IN Y. GRAFICO TIPO HISTOGRAMA
png("public.png", width=480, height=480) # configurando o nome e dimensoes do arquivo a ser gerado
plot(dates, counts, type="h", lty = "dashed",lwd = 3, col = "dark red", main = "frequencia Big data _Twiter")
dev.off()
plot(dates, counts, type="h", lty = "dashed",lwd = 3, col = "dark red", main = "frequencia Big data _Twiter")

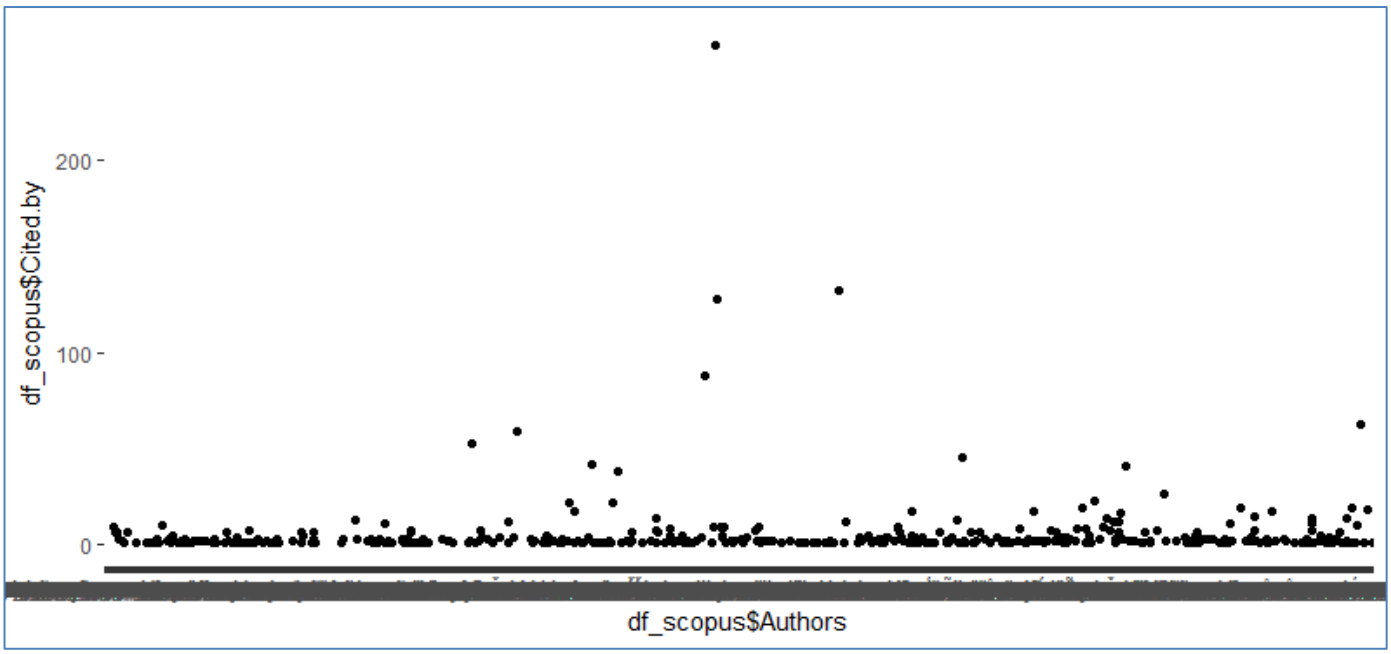
#RESULTADO



#GRAFICO DE LINHA E PONTOS MAIS SIMPLES

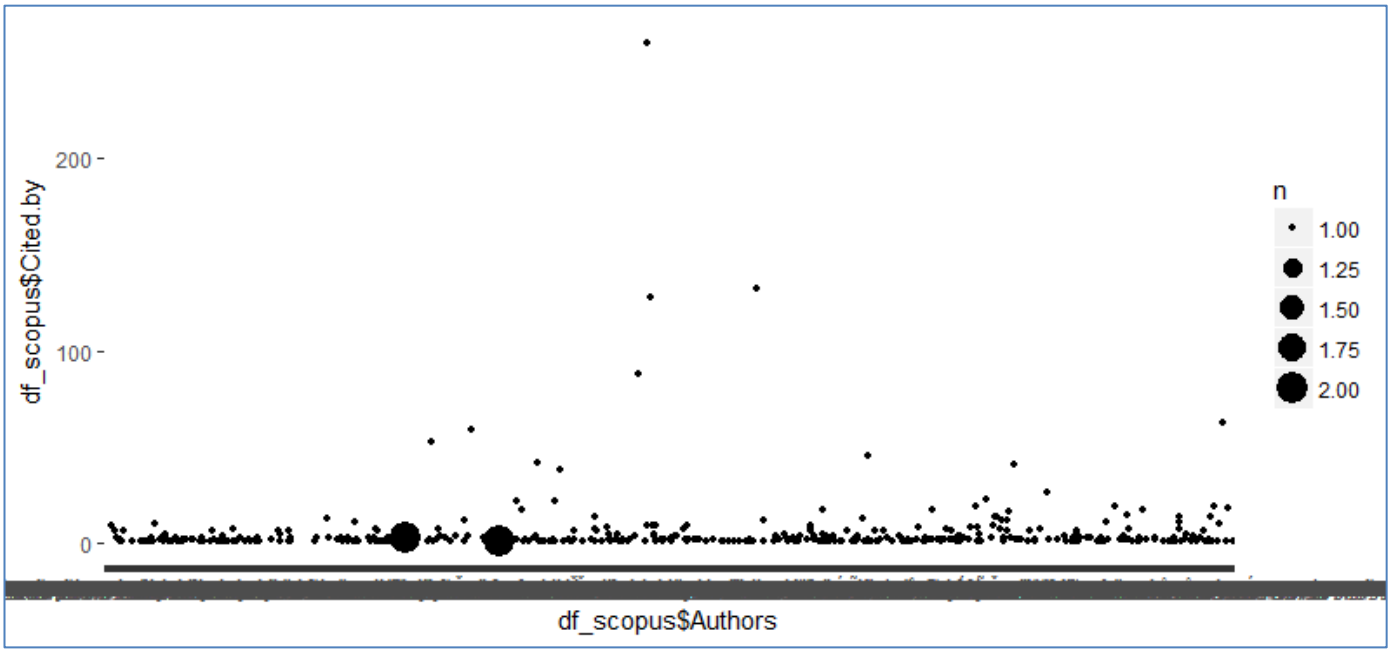
```
qplot(df_scopus$Authors, df_scopus$Cited.by, data = citados1)
```

#RESULTADO



#GRAFICO CONTANDO OS PONTOS E AGREGANDO...
ggplot(citados1, aes(df_scopus$Authors, df_scopus$Cited.by)) + geom_count()

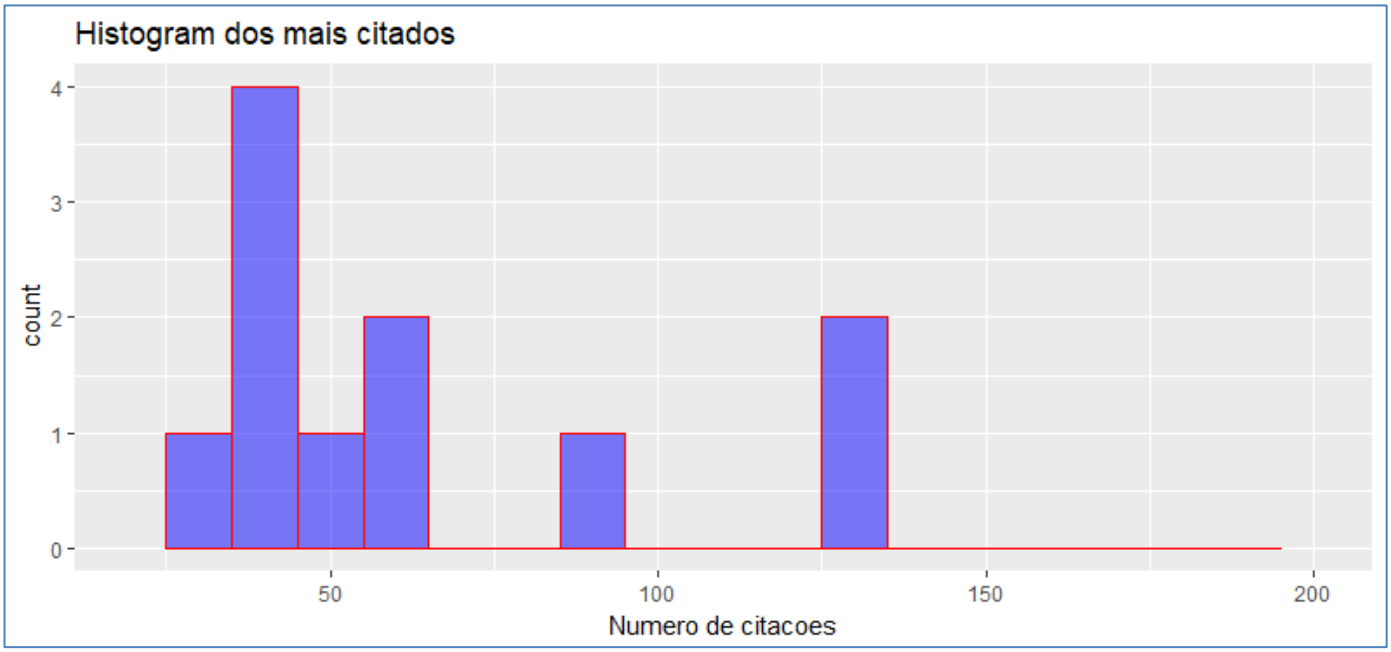
#RESULTADO



#PLOTANDO HISTOGRAMA DOS PAPERS MAIS CITADOS (CITED.BY)

```
qplot(citados1$df_scopus.Cited.by,
    geom="histogram",
    binwidth = 10,
    main = "Histogram dos mais citados",
    xlab = "Numero de citacoes",
    fill=I("blue"),
    col=I("red"),
    alpha=I(.5),
    xlim=c(20,200))
```

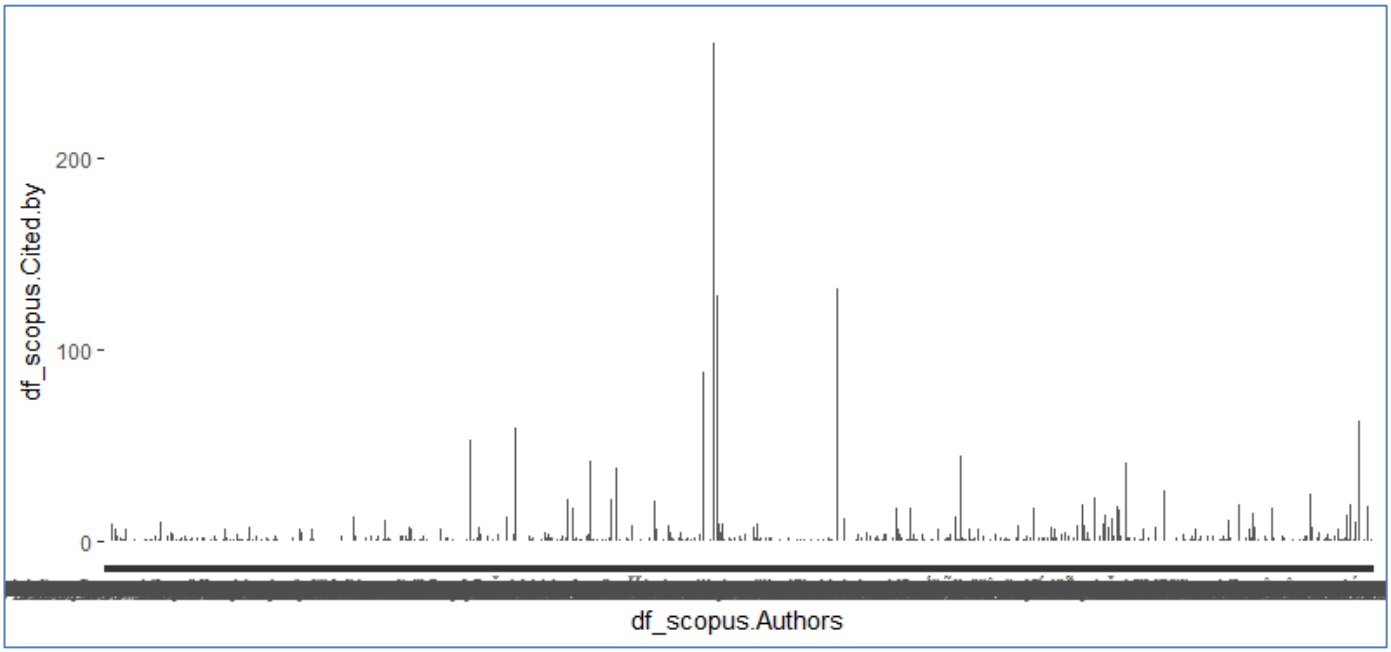
#RESULTADO



#GRAFICO DE DISPERSAO DO DATA FRAME COM OS MAIS CITADOS

```
graf1 <- ggplot(citados1, aes(df_scopus.Authors, df_scopus.Cited.by)) + geom_col()
print(graf1)
```

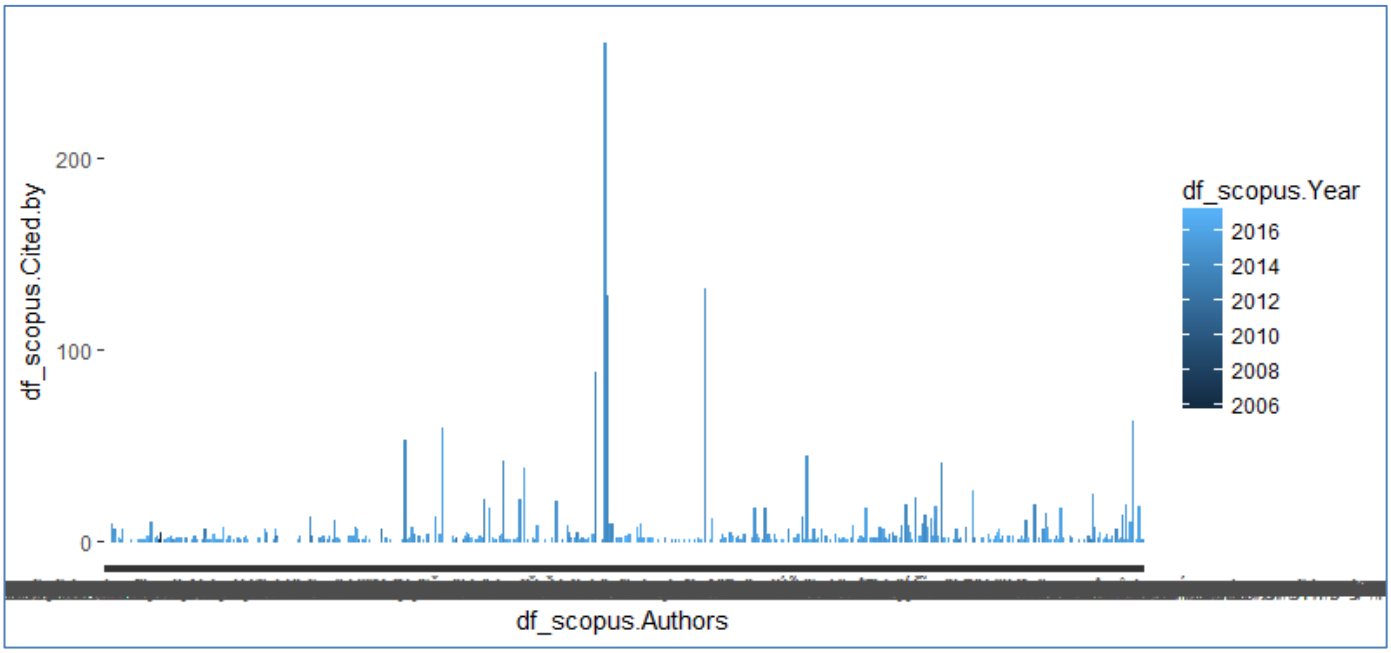
#RESULTADO



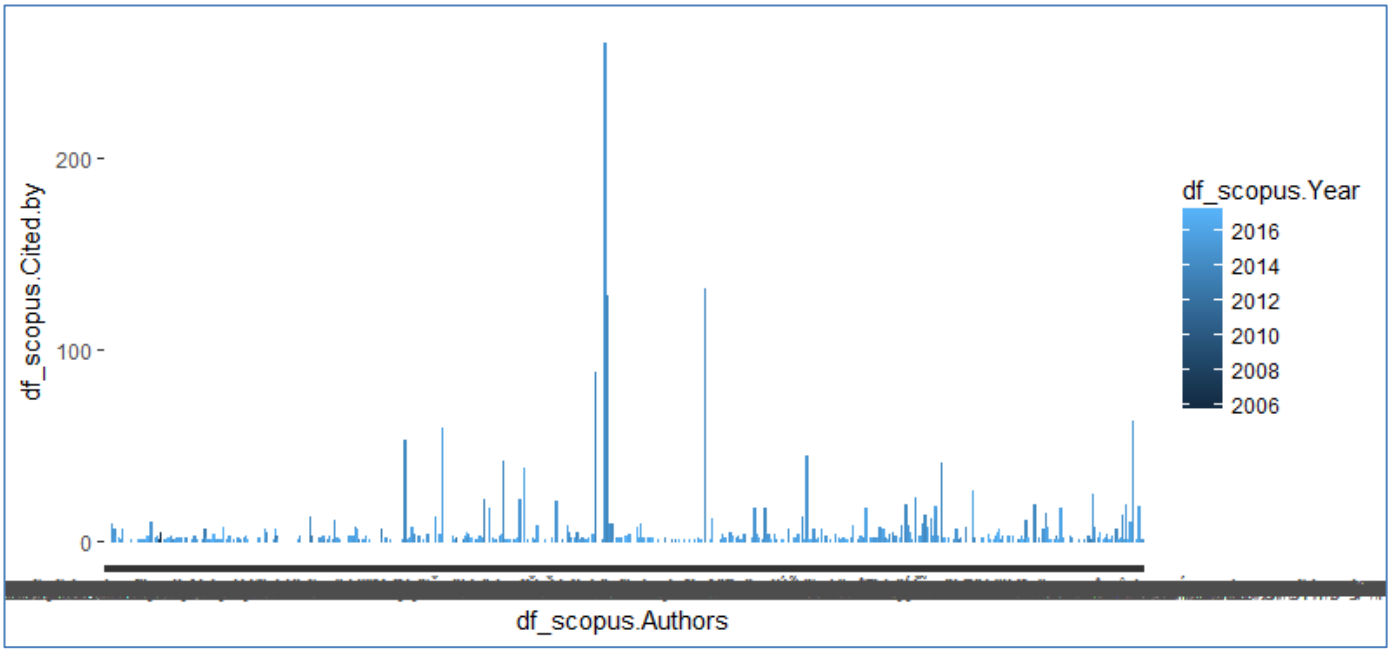
#COLOCANDO O NUMERO DE RETWEETS EM OUTRA COR

```
graf2 <- ggplot(citados1, aes(df_scopus.Authors, df_scopus.Cited.by, color= df_scopus.Year)) + geom_col()
print(graf2)
```

#RESULTADO



```
#IMPLEMENTANDO UM GRADIENTE DE DENSIDADE NO GRAFICO 2
graf3 <- graf2 + stat_density_2d(aes(fill = ..level..), geom = "polygon")
print(graf3)

#RESULTADO
```



C) CAPTURANDO DADOS VIA API DO TWITTER E CONSTRUIR UMA VISUALIZAÇÃO COM OS DADOS CAPTURADOS - MESMO TEMA: INDUSTRY 4.0

```
#INTALANDO OS PACOTES NECESSÁRIOS
install.packages("ROAuth")
install.packages("httr")
install.packages("twitteR")
inslall.packages("ggplot2")
library(ROAuth)
library(httr)
library(twitteR)
library(ggplot2)

#AUTORIZAÇÃO PARA CONEXAO
consumer_key <- "yXMh58iuDoiwRmKQOq64poybF"
consumer_secret <- "S4c83c12PnVLIMYSinD8ni7W9SeWaHINUDvRsSWoQLMMBvIpbv"
access_token <- "89181964-YDoJuo3oqamuIttHmj0Zcummx3aoY6lqEjWPjzOwQ"
access_secret <- "kyVDRc7U0tIK4aAGwBwWQqKOuwPCcCqnEHXDHsKuULely"

setup_twitter_oauth(consumer_key,
                    consumer_secret,
                    access_token,
                    access_secret)

#DEFININDO TERMOS DE BUSCA COMO NA BUSCA DA BASE SCOPUS
tweets <- searchTwitter("industry 4.0", n = 10000, lang = "en")

#checando os cabecalhos
head(tweets)
```

#RESULTADO

```
> head(tweets)
[[1]]
[1] "davidgsIoT: RT @IanSkerrett: Next Monday I will be leading a virtual IoT Meetup on the topic of Open Sourc
e Software for Industry 4.0.  I hope you will…"

[[2]]
[1] "TechNativeWire: RT @TechNative: #Salesforce debut #Industry40 services https://t.co/53RYp8GlAC #IIoT #Pred
ictiveAnalytics #IoT #CRM"

[[3]]
[1] "theodoropoylos: The Role of ChatBot in Industry 4.0 – Chatbot's Life https://t.co/8iXlQaN5US https://t.co/
cqph2BsaOF"

[[4]]
[1] "digitalbizumzl1: RT @ipfconline1: #Industry40 Has Been a Forecast of a Great Change, Namely, Because It Is
 To Be The 4th Industrial Revolution [Infographic]…"

[[5]]
[1] "BrunelwinEC: RT @CiscoUKI: The factory of the future is already here... we're at #TMLive #SmartFactoryExpo
```

#RESUMINDO INFORMAÇÕES DOS TWEETS NUM DATA FRAME

df.tweets <- twListToDF(tweets)
names(df.tweets)
View(df.tweets)

#RESULTADO

```
> names(df.tweets)
 [1] "text"          "favorited"     "favoriteCount"
 [4] "replyToSN"     "created"       "truncated"
 [7] "replyToSID"    "id"            "replyToUID"
[10] "statusSource"  "screenName"    "retweetCount"
[13] "isRetweet"     "retweeted"     "longitude"
[16] "latitude"
```

	text	favorited	favoriteCount	replyToSN	created	truncated	replyToSID	id	replyToUID	statusSource
1	RT @IanSkerrett: Next Monday I will be leading a virtual ...	FALSE	0	NA	2017-11-14 18:21:48	FALSE	NA	930501033255510016	NA	<a href="http://twitter.com/download/iphone"
2	RT @TechNative: #Salesforce debut #Industry40 services ...	FALSE	0	NA	2017-11-14 18:17:40	FALSE	NA	930499991080226817	NA	<a href="http://twitter.com/download/iphone"
3	The Role of ChatBot in Industry 4.0 – Chatbot's Life http...	FALSE	0	NA	2017-11-14 18:14:07	FALSE	NA	930499097840246784	NA	<a href="http://bufferapp.com" rel="nofollow"
4	RT @ipfconline1: #Industry40 Has Been a Forecast of a ...	FALSE	0	NA	2017-11-14 18:12:19	FALSE	NA	930498643529994240	NA	<a href="http://twitter.com/download/iphone"
5	RT @CiscoUKI: The factory of the future is already here....	FALSE	0	NA	2017-11-14 18:10:04	FALSE	NA	930498077802352641	NA	<a href="http://twitter.com/#!/download/ipad"
6	RT @christianherm: Great post by @robindchnt on evolu...	FALSE	0	NA	2017-11-14 18:09:15	FALSE	NA	930497871920685057	NA	<a href="http://twitter.com/download/iphone"
7	Why not use #TechTuesday to submit yr abstract to @ind...	FALSE	0	NA	2017-11-14 18:08:00	TRUE	NA	930497558748610560	NA	<a href="https://about.twitter.com/products/tv
8	RT @ipfconline1: #Industry40 Has Been a Forecast of a ...	FALSE	0	NA	2017-11-14 18:07:20	FALSE	NA	930497392390148096	NA	<a href="http://twitter.com/download/iphone"
9	RT @CarloGavazziNA: We're busily preparing for 2018 in ...	FALSE	0	NA	2017-11-14 18:06:03	FALSE	NA	930497066731786242	NA	<a href="http://twitter.com/download/iphone"
10	RT @TopCyberNews: @NOWSAMME @PapaPorter1 @ma...	FALSE	0	NA	2017-11-14 18:03:59	FALSE	NA	930496548861042688	NA	<a href="http://twitter.com" rel="nofollow">Tw
11	RT @IanSkerrett: Next Monday I will be leading a virtual ...	FALSE	0	NA	2017-11-14 18:03:18	FALSE	NA	930496377989287937	NA	<a href="https://about.twitter.com/products/tv
12	RT @ipfconline1: #Industry40 Has Been a Forecast of a ...	FALSE	0	NA	2017-11-14 18:02:13	FALSE	NA	930496104730320896	NA	<a href="https://mobile.twitter.com" rel="nofo

#FILTRANDO OS TWEETS POR POPULARIDADE (CONTAGEM DE REPLICAÇÕES)

df_reduzido <- df.tweets[df.tweets$retweetCount >20,]
#vendo a fonte destes 50 mais tuitados
df_reduzido$statusSource
#outra forma
df_reduzido <- df.tweets %>%
  filter(retweetCount > 20)

#RESULTADO

	text	favorited	favoriteCount	replyToSN	created	truncated	replyToSID	id
1	RT @ADAPT_bulletin: The program of our #International ...	FALSE	0	NA	2017-11-14 17:25:52	FALSE	NA	930486957549019137
2	RT @ADAPT_bulletin: The program of our #International ...	FALSE	0	NA	2017-11-14 17:21:42	FALSE	NA	930485907760795649
3	RT @ADAPT_bulletin: The program of our #International ...	FALSE	0	NA	2017-11-14 17:05:35	FALSE	NA	930481852560928768
4	RT @ADAPT_bulletin: The program of our #International ...	FALSE	0	NA	2017-11-14 17:03:43	FALSE	NA	930481379623743489
5	RT @dbi_srl: The Industry 4.0 #Ecosystem {Infographic} #...	FALSE	0	NA	2017-11-14 17:01:20	FALSE	NA	930480780010246145
6	RT @dbi_srl: The Industry 4.0 #Ecosystem {Infographic} #...	FALSE	0	NA	2017-11-14 16:41:57	FALSE	NA	930475903758499840
7	RT @IoTRecruiting: The Ramifications of Not Accepting I...	FALSE	0	NA	2017-11-14 15:55:40	FALSE	NA	930464257346596864
8	RT @dbi_srl: The Industry 4.0 #Ecosystem {Infographic} #...	FALSE	0	NA	2017-11-14 15:55:32	FALSE	NA	930464223645270017
9	RT @dbi_srl: The Industry 4.0 #Ecosystem {Infographic} #...	FALSE	0	NA	2017-11-14 15:49:48	FALSE	NA	930462778430820352
10	RT @IoTRecruiting: The Ramifications of Not Accepting I...	FALSE	0	NA	2017-11-14 15:07:30	FALSE	NA	930452134830661634
11	RT @IoTRecruiting: The Ramifications of Not Accepting I...	FALSE	0	NA	2017-11-14 15:04:24	FALSE	NA	930451353138327553
12	RT @IoTRecruiting: The Ramifications of Not Accepting I...	FALSE	0	NA	2017-11-14 15:04:08	FALSE	NA	930451285828136960
13	RT @dbi_srl: The Industry 4.0 #Ecosystem {Infographic} #...	FALSE	0	NA	2017-11-14 15:00:05	FALSE	NA	930450266561957888
14	RT @dbi_srl: The Industry 4.0 #Ecosystem {Infographic} #...	FALSE	0	NA	2017-11-14 14:59:47	FALSE	NA	930450193719406592
15	RT @IoTRecruiting: The Ramifications of Not Accepting I...	FALSE	0	NA	2017-11-14 14:43:19	FALSE	NA	930446046634881024

Showing 1 to 16 of 868 entries

# REMOVE TODOS OS RETWEETS DA LISTA DE TWEETS
tweets_noret <- strip_retweets(tweets, strip_manual=TRUE, strip_mt=TRUE)
tweet.df <- twListToDF(tweets_noret)

#RESULTADO

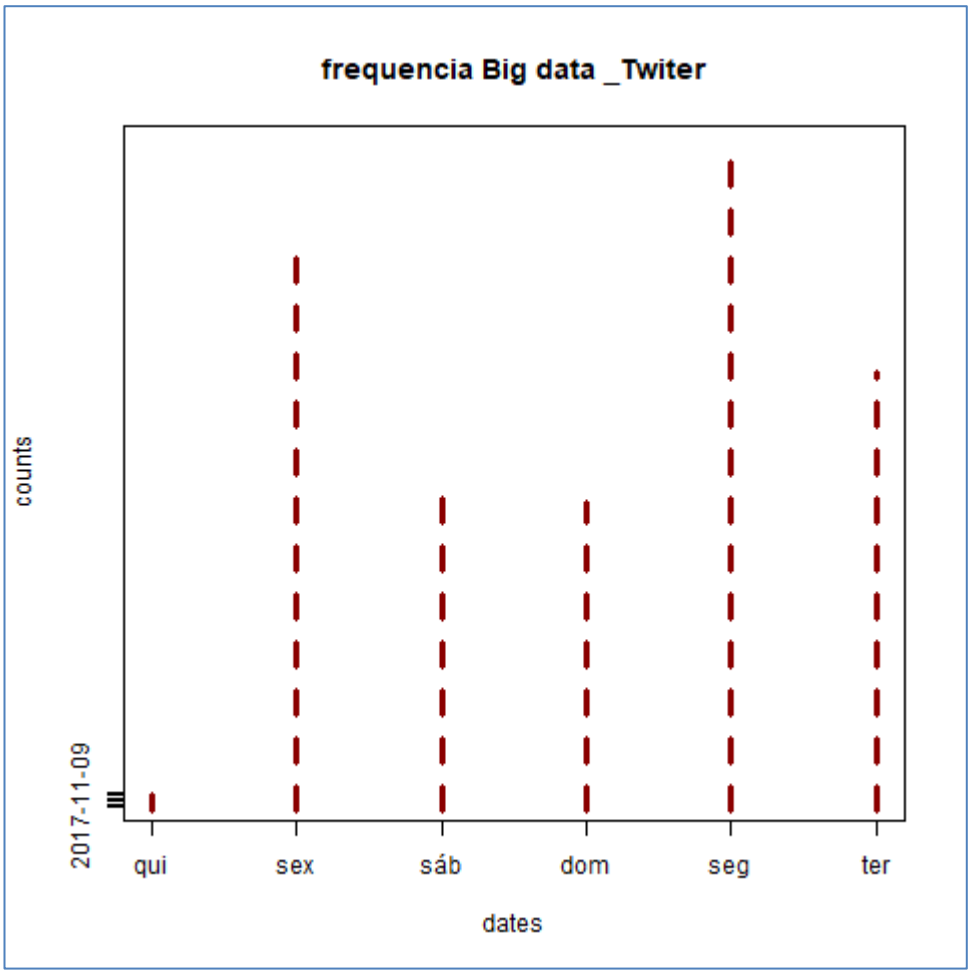
	text	favorited	favoriteCount	replyToSN	created	truncated	replyToSID	id
1	The Role of ChatBot in Industry 4.0 – Chatbot's Life http...	FALSE	0	NA	2017-11-14 18:14:07	FALSE	NA	9304
2	Why not use #TechTuesday to submit yr abstract to @Ind...	FALSE	0	NA	2017-11-14 18:08:00	TRUE	NA	9304
3	UK is in pole position to benefit from #Industry40 https:...	FALSE	0	NA	2017-11-14 18:00:47	FALSE	NA	9304
4	Industry 4.0 comes to blow molding https://t.co/33gPg...	FALSE	0	NA	2017-11-14 18:00:38	FALSE	NA	9304
5	Why manufacturers must embrace Industry 4.0? https://t...	FALSE	0	NA	2017-11-14 18:00:01	FALSE	NA	9304
6	The IoT Meetup will be based on the content on our rec...	FALSE	1	IanSkerrett	2017-11-14 17:59:43	TRUE	930494402073710592	9304
7	Next Monday I will be leading a virtual IoT Meetup on th...	FALSE	2	NA	2017-11-14 17:55:27	TRUE	NA	9304
8	Reinventing Industry 4.0 with disruptive technologies in...	FALSE	1	NA	2017-11-14 17:43:07	TRUE	NA	9304
9	One of the most promising and direct applications of th...	FALSE	0	NA	2017-11-14 17:35:15	TRUE	NA	9304
10	Real-time Supply Chain Optimization is part of Industry ...	FALSE	0	NA	2017-11-14 17:30:08	FALSE	NA	9304
11	The true meaning of Industry 4.0 for Asian manufacturer...	FALSE	0	NA	2017-11-14 17:10:30	FALSE	NA	9304
12	#Salesforce debut Industry 4.0 services. https://t.co/nTM...	FALSE	0	NA	2017-11-14 17:10:26	FALSE	NA	9304
13	@NOWIAMME @PapaPorter1 @makinoshinichi7 @Tom_...	FALSE	2	TopCyberNews	2017-11-14 17:09:43	TRUE	930482493727428608	9304
14	Industry 4.0 and the fourth industrial revolution - guide...	FALSE	0	NA	2017-11-14 17:06:05	FALSE	NA	9304
15	DROPS OF INFUSTRY 4.0 is about to come ! Here our top ...	FALSE	0	NA	2017-11-14 17:05:26	TRUE	NA	9304

Showing 1 to 16 of 741 entries

#PREPARANDDO VARIAVEIS PARA PLOTAR OCORRENCIA DA PALAVRA DE BUSCA POR DATA
Created <- tweet.df$created
counts <- table(as.Date(Created)) #definindo eixo Y
dates <- as.Date(names(counts)) #definindo eixo X

PLOTANDO UM GRAFICO COM AS DATAS EM X E O NUMERO DE TWEETS IN Y. GRAFICO TIPO HISTOGRAMA
png("tweet_1.png", width=480, height=480) # configurando o nome e dimensões do arquivo a ser gerado
plot(dates, counts, type="h", lty = "dashed",lwd = 3, col = "dark red", main = "frequencia Big data _Twiter")
# FECHANDO O ARQUIVO COM A FUNÇÃO
dev.off()

#RESULTADO tweet_1.png



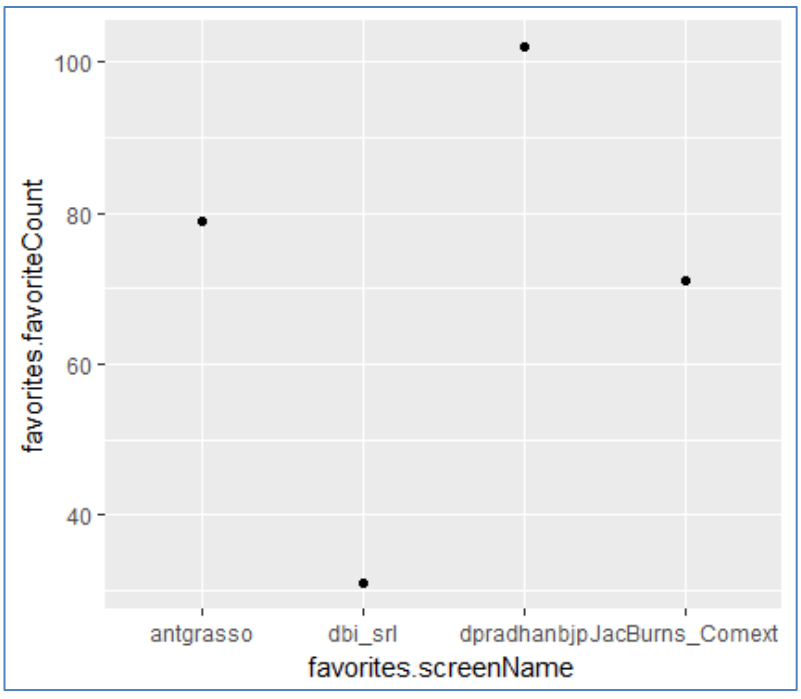
#SELECIONANDO OS TWEET FAVORITOS

```
favorites <- subset ( tweet.df, tweet.df$favoriteCount > 30)
favorites1 <- data.frame (favorites$screenName, favorites$favoriteCount, favorites$retweetCount)
```

#GRAFICO DE LINHA E PONTOS MAIS SIMPLES

```
qplot(favorites.screenName, favorites.favoriteCount, data = favorites1)
```

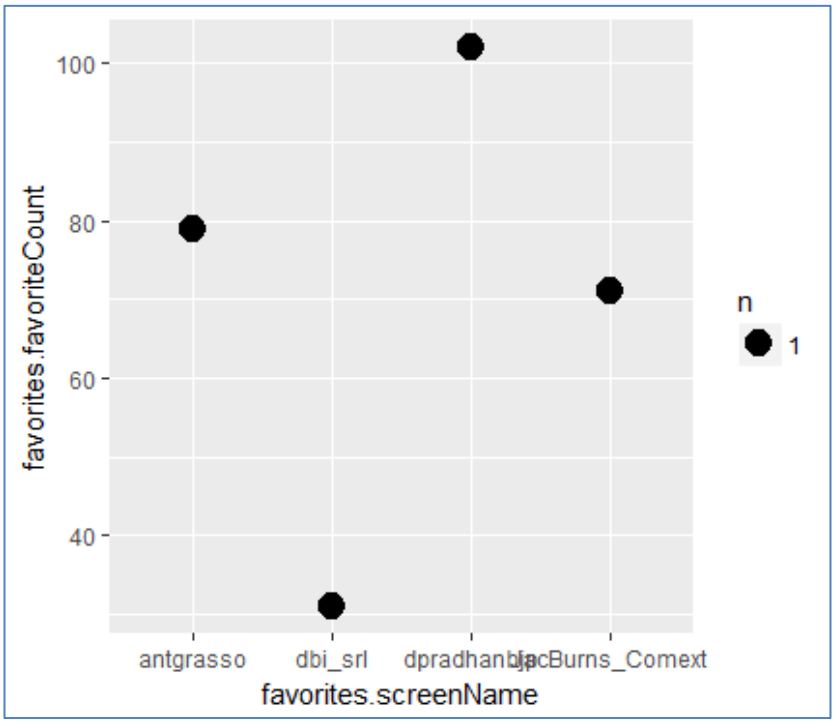
#RESULTADO



#GRAFICO CONTANDO OS PONTOS E AGREANDO...

```
ggplot(favorites1, aes(favorites.screenName, favorites.favoriteCount)) + geom_count()
```

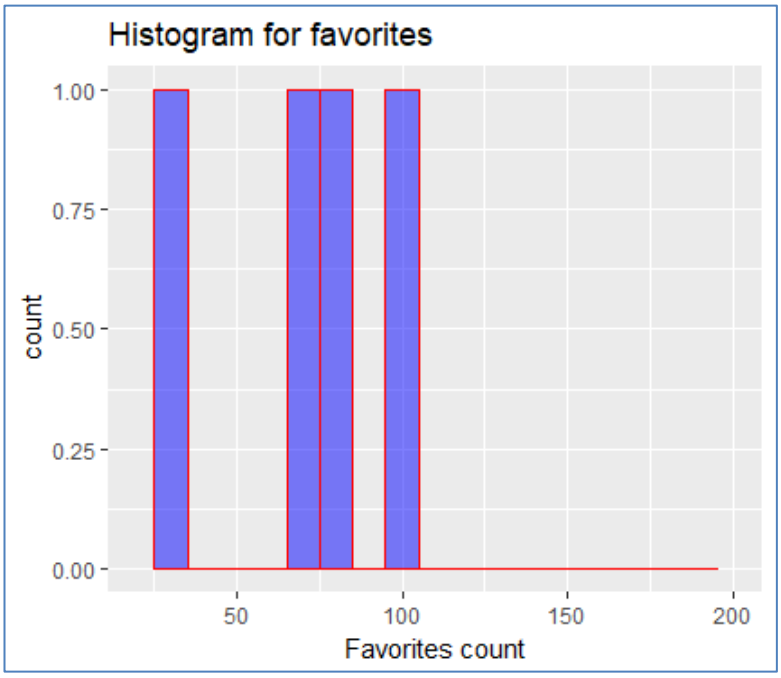
#RESULTADO



#PLOTANDO HISTOGRAMA DAS CURTIDAS (FAVORITESCOUNT)

```
qplot(favorites1$favorites.favoriteCount,
    geom="histogram",
    binwidth = 10,
    main = "Histogram for favorites",
    xlab = "Favorites count",
    fill=I("blue"),
    col=I("red"),
    alpha=I(.5),
    xlim=c(20,200))
```

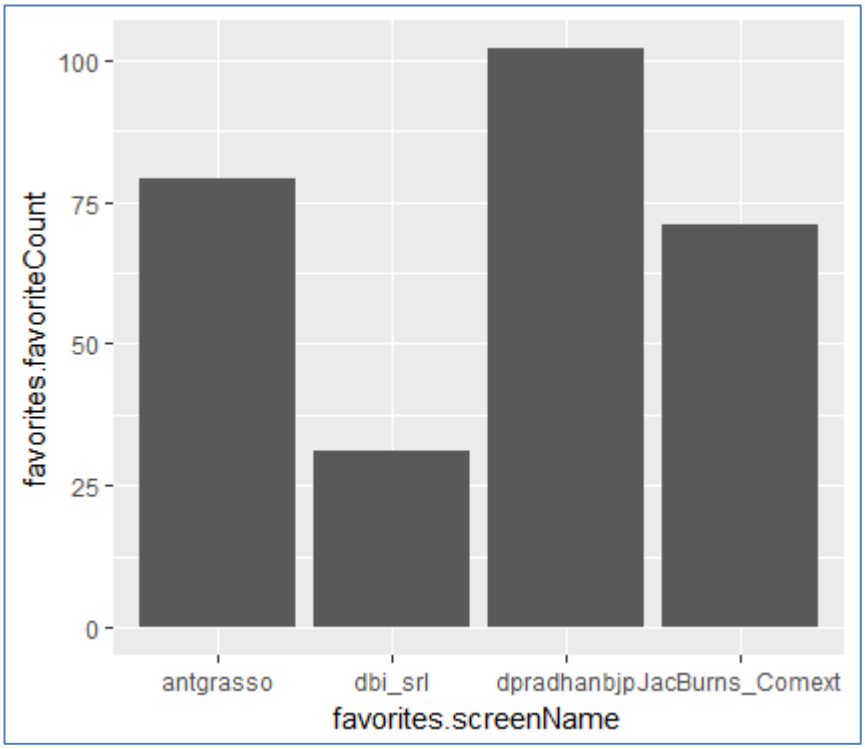
#RESULTADO



#GRAFICO DE DISPERSAO DO DATA FRAME FAVORITES, MOSTRANDO OS MAIS CURTIDOS (EM COLUNAS)

```
graf1 <- ggplot(favorites1, aes(favorites.screenName, favorites.favoriteCount)) + geom_col()
print(graf1)
```

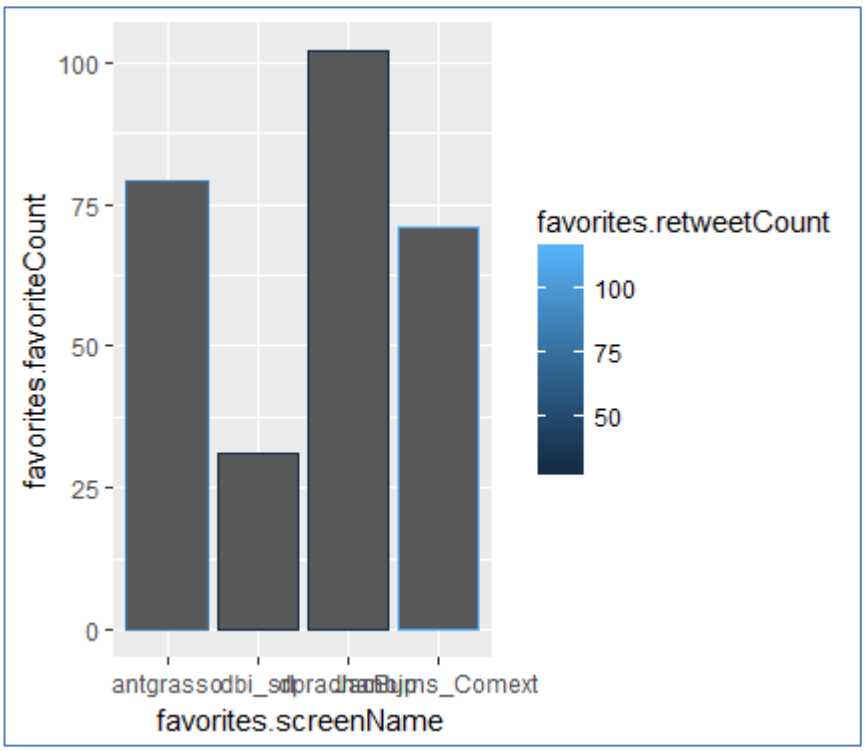
#RESULTADO



#COLOCANDO O NUMERO DE RETWEETS EM OUTRA COR

```
graf2 <- ggplot(favorites1, aes(favorites.screenName, favorites.favoriteCount, color= favorites.retweetCount)) +
geom_col()
print(graf2)
```

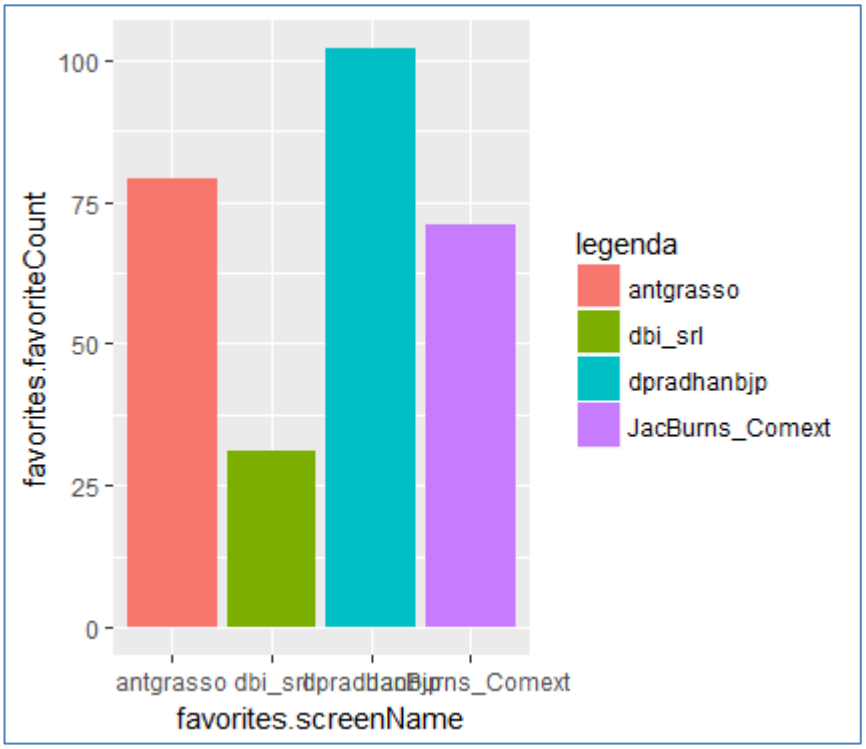
#RESULTADO



#COLOCANDO CORES NAS BARRAS E INDICANDO COM LEGENDA

```
legenda <- as.character(favorites1$favorites.screenName)
graf3 <- ggplot(favorites1, aes(favorites.screenName, favorites.favoriteCount, fill= legenda)) + geom_col()
print(graf3)
```

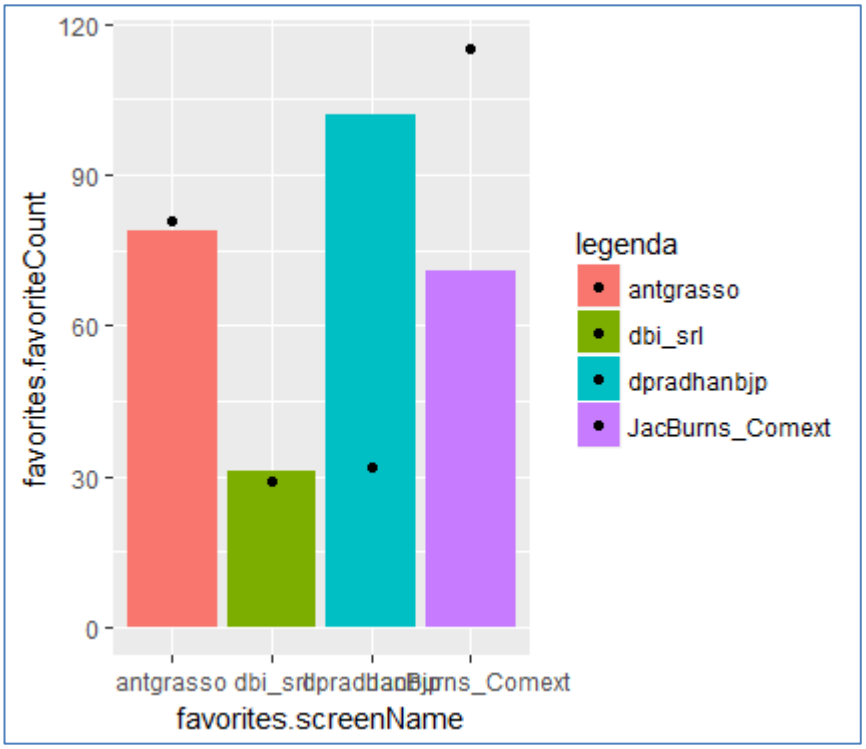
#RESULTADO



#ADICIONANDO OUTRA VARIAVEL Y REPRESENTADA EM PONTOS

```
graf4 <-  graf3 + geom_point(data=favorites1, aes(favorites.screenName, favorites.retweetCount))
print(graf4)
```

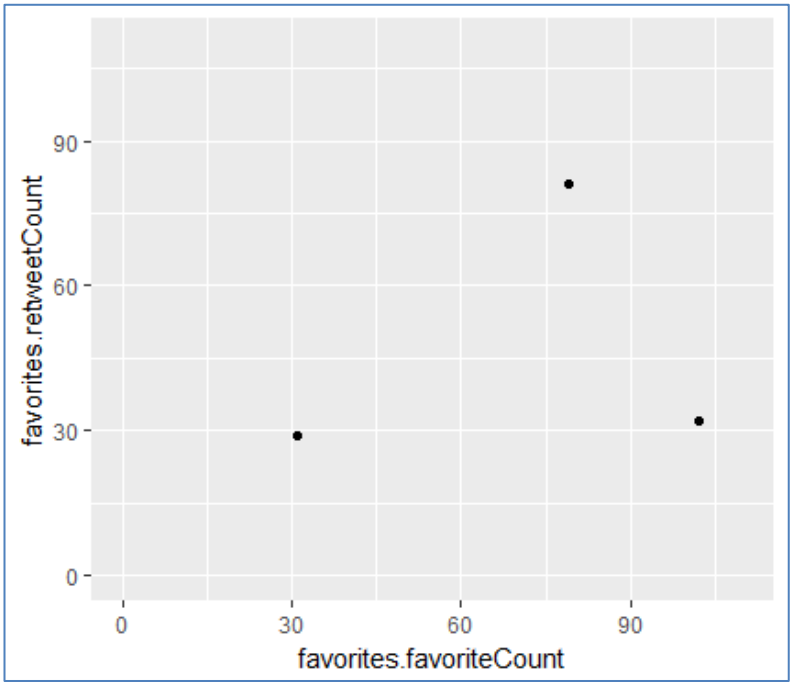
#RESULTADO



#PLOTANDO A RELACAO DOS MAIS CURTIDOS COM OS MAIS RETUITADOS

```
graf5 <- ggplot(favorites1, aes(x = favorites.favoriteCount, y = favorites.retweetCount)) +
  geom_point() +
  xlim(0, 110) +
  ylim(0, 110)
graf5 + geom_density_2d()
print(graf5)
```

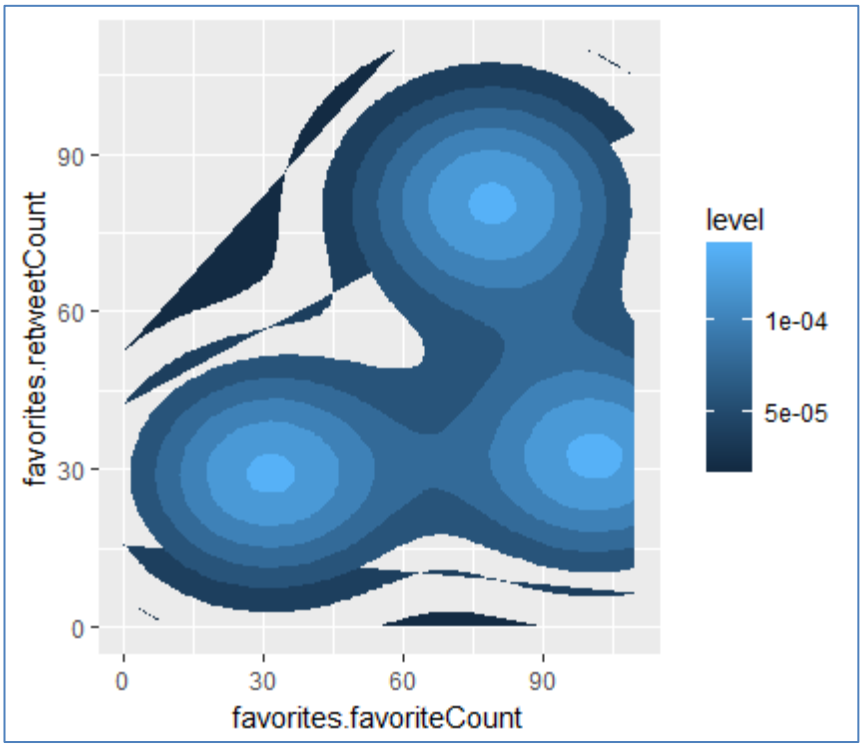
#RESULTADO



#IMPLEMENTANDO UM GRADIENTE DE DENSIDADE NO GRAFICO 5

```
graf6 <- graf5 + stat_density_2d(aes(fill = ..level..), geom = "polygon")
print(graf6)
```

#RESULTADO



D) RASPANDO OS RESUMOS DA REVISTA "Procedia" E SALVANDO NUMA TABELA NO EXCEL PARA AVALIAR O CONTEUDO DAS PUBLICAÇÕES SOBRE A QUARTA REVOLUÇÃO INDUSTRIAL

```
#INSTALANDO PACKAGES
install.packages("rvest")
install.packages("dplyr")
install.packages("stringr")
install.packages("wordcloud")
install.packages("tm")
library(wordcloud)
library(tm)
library(rvest)
library(dplyr)
library(stringr)

# DEFININDO URL DE BUSCA- PROCEDIA CIRP ARTICLES:
url_procedia  <- "https://www.sciencedirect.com/journal/procedia-cirp/vol/63/suppl/C"

#DEFININDO DATA FRAMES DE USO FINAL E TEMPORARIO
tabela_procedia <- data_frame()
tabela_artigos <- data_frame()
titulo1 <- data_frame()
tabela_artigos_f1 <- data.frame ()
tabela_artigos_f <- data.frame()
tabela_artigos_final <- data.frame()

#RASPANDO OS LINK DE CADA PUBLICAÇÃO E JOGANDO NUM DATAFRAME
pagina <- read_html(url_procedia)
nodes_link <- html_nodes(pagina, xpath = "//a[@class = 'anchor article-content-title u-margin-top-xs u-margin-bottom-s']")
links <- html_attr(nodes_link, name = "href")
links <- str_replace_all(links, "/s", "https://www.sciencedirect.com/s")

#GUARDANDO NUM DATA FRAME TODOS OS LINKS DE TODOS OS VOLUMES E EDICOES DO PERIODICO (DE TODOS OS ANOS)
tabela_procedia <- data.frame(links)
tabela_procedia <- tabela_procedia$links[2:100]#obs: mudar modo de seleção
tabela_procedia <- data.frame(tabela_procedia)

#CAPTURANDO O TEXTO COMPLETO CONTIDO EM CADA LINK DO DATA FRAME (PROCEDIA)
for (link in tabela_procedia$tabela_procedia){

  pagina_artigo <- read_html(link)
  node_titulo <-html_nodes(pagina_artigo, xpath = "//h1[@class = 'article-title']/span")
  titulo <- html_text(node_titulo)
  titulo <- data.frame(titulo)

  node_resumo <- html_nodes(pagina_artigo, xpath = "//div[@class = 'abstract author']//p")
  resumo <- html_text(node_resumo)
  resumo <- paste(resumo, collapse = " ")
  resumo <- data.frame(resumo)

  tabela_artigos_f <- cbind (titulo, resumo, link)
  #guardando num data frame (f1)todos os links dos resumos e textos completos de cada publicação
  tabela_artigos_final <- rbind (tabela_artigos_final, tabela_artigos_f )
}
```

#RESULTADO

	titulo	resumo	link
1	User-experience Based Product Development for Mass P...	Nowadays, with the rapid development of information t...	https://www.sciencedirect.com/science/article/pii/S22128...
2	Development of a Sensor Prototype and Geometry Base...	The application of periodic microscale-structures, so-call...	https://www.sciencedirect.com/science/article/pii/S22128...
3	Competitive Price Strategy with Activity-Based Costing – ...	Bicycle parts industry is a highly competitive industry, es...	https://www.sciencedirect.com/science/article/pii/S22128...
4	A Heuristic Approach to Solve an Industrial Scalability Pr...	In recent years, the rapid change of market demand is in...	https://www.sciencedirect.com/science/article/pii/S22128...
5	Co-creation in the Early Stage of Product-service System ...	Co-creation is a well-established topic in manufacturing...	https://www.sciencedirect.com/science/article/pii/S22128...
6	Investigating Flexibility as a Performance Dimension of a...	In recent years manufacturing companies have been fac...	https://www.sciencedirect.com/science/article/pii/S22128...
7	Manufacturing System on the Cloud: A Case Study on Cl...	The modern industry requires the next generation of ma...	https://www.sciencedirect.com/science/article/pii/S22128...
8	Augmented Reality Application to Support Remote Main...	Maintenance of manufactured products is among the m...	https://www.sciencedirect.com/science/article/pii/S22128...
9	User-experience Based Product Development for Mass P...	Nowadays, with the rapid development of information t...	https://www.sciencedirect.com/science/article/pii/S22128...
10	Development of a Sensor Prototype and Geometry Base...	The application of periodic microscale-structures, so-call...	https://www.sciencedirect.com/science/article/pii/S22128...
11	Competitive Price Strategy with Activity-Based Costing – ...	Bicycle parts industry is a highly competitive industry, es...	https://www.sciencedirect.com/science/article/pii/S22128...
12	A Heuristic Approach to Solve an Industrial Scalability Pr...	In recent years, the rapid change of market demand is in...	https://www.sciencedirect.com/science/article/pii/S22128...
13	Co-creation in the Early Stage of Product-service System ...	Co-creation is a well-established topic in manufacturing...	https://www.sciencedirect.com/science/article/pii/S22128...

Showing 1 to 14 of 107 entries

#SALVANDO EM CSV NO DRIVE DO PC

```
setwd ("C:/Users/lecap/Documents/LETICIA/ARQUIVOS LETICIA backup/2 ACADEMICO/DOUTORADO/DISCIPLINAS/RENATO")
write.csv(tabela_artigos_final, "tabela_final.csv", row.names = FALSE)
```