Forbes 'MOST POPULAR'

Data Mining

https://github.com/Trigger21

Forbes Site

Forbes

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- Crawling
- Data Refined
- WordCloud

1. Crawling

- **Selenium을 이용한 Crawling**
- **Selenium을 선택한 이유**

  : Forbes site는 동적인 주소를 사용하고 있고, 각 페이지 이동 시 버튼을 눌러, 이동해야 하기 때문에 Selenium 패키지를 사용함.

- **사용 방법 : 다음 슬라이드에서 안내**

1. Crawling(Selenium)

```
library(RSelenium)                                          #라이브러리 실행
Ch=wdman::chrome(port=4567L)                                #변수에 크롬포트 설정

remDr=remoteDriver(port=4567L, browserName='chrome')        #리모트 드라이브 실행
remDr$open()                                                #크롬드라이버 실행
remDr$navigate(https://www.forbes.com)                      #Forbes Site 이동

webElem0 <- remDr$findElement(using = "css selector", "div.continue-button")
webElem0$clickElement()                                     #객체(버튼) 찾은 후 클릭

source<-remDr$getPageSource()[[1]]                          #페이지 소스 가져오기
html <- read_html(source)                                   #html  Read
url <- html_nodes(html, css ="a.ng-scope > h2 > span")%>%    #내용 부분 찾기
html_text()
```

2. Data Refined

- 크롤링한 데이터를 정제
  1. 특수기호 삭제
  2. 특정문제 치환
  3. 불용어 추출

```
issue1 <- VCorpus(VectorSource(x))
issue2 <- TermDocumentMatrix(issue1)
m1 <- as.matrix(issue2)
rowSums(m1)

issue3 <- tm_map(issue1, stripWhitespace)  #공백제거
issue3 <- tm_map(issue3, tolower)              #모든문자 소문자 변환
issue3 <- tm_map(issue3, removeNumbers) #숫자제거
issue3 <- tm_map(issue3, removePunctuation) #구두점제거
issue3 <- tm_map(issue3, PlainTextDocument) #문자 빈도수 추출 후 행렬에 저장

tostring <- content_transformer(function(x,from,to) gsub(from,to,x))
issue3 <- tm_map(issue3, tostring, "”", "")
issue3 <- tm_map(issue3, tostring, "“", "")
issue3 <- tm_map(issue3, tostring, "’s", "")
issue3 <- tm_map(issue3, tostring, "’ll", "")
issue3 <- tm_map(issue3, tostring, "’ve", "")
issue3 <- tm_map(issue3, tostring, "’re", "")

sword2 <- c(stopwords("en"), "end", "but", "not")
issue3 <- tm_map(issue3, removeWords, sword2)  # 불용어 제거(전치사, 관사...)
issue4 <- TermDocumentMatrix(issue3)

m2 <- as.matrix(issue4)
issue5 <- sort(rowSums(m2), decreasing = T)
```

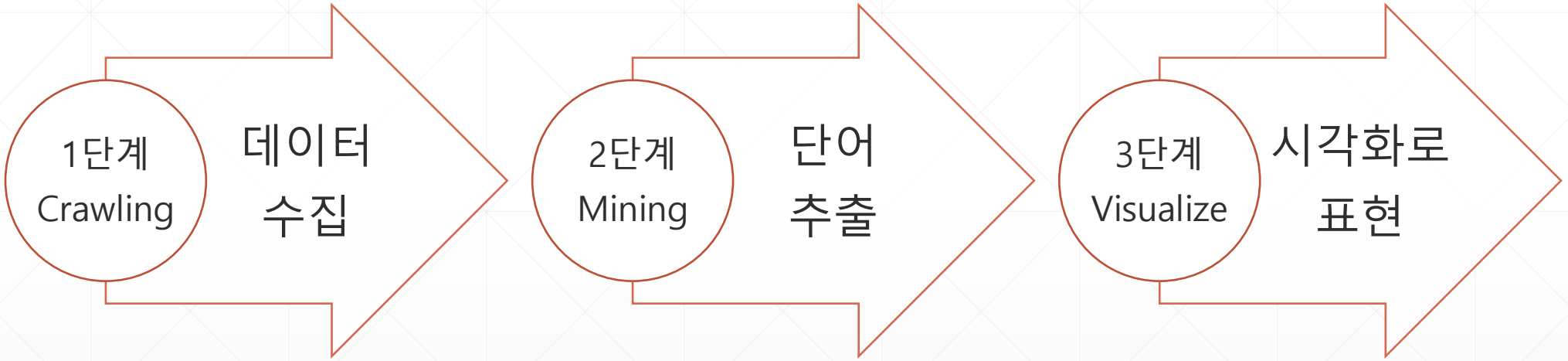
3. WordCloud

- 마이닝한 단어로 워드 클라우드 생성
- 워드 클라우드 패키지 선언

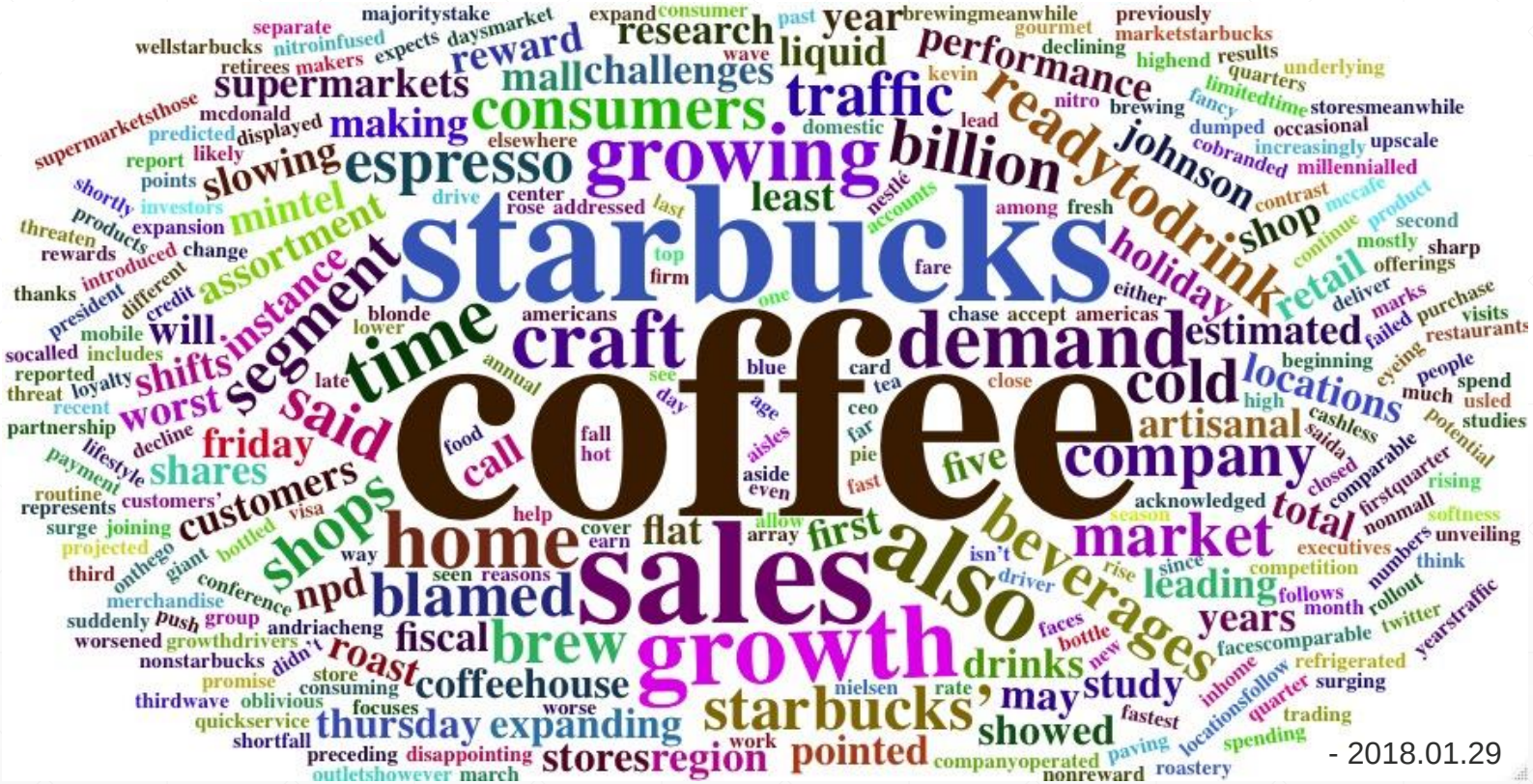
  : library(wordcloud2)
- 함수 사용

  : wordcloud2(as.table(issue5)) ※함수(테이블(정제된 데이터))

Data Maining Flow



- Wordcloud Image



감사합니다.