Amazon vs. Google

TEXT MINING WITH BAG-OF-WORDS IN R

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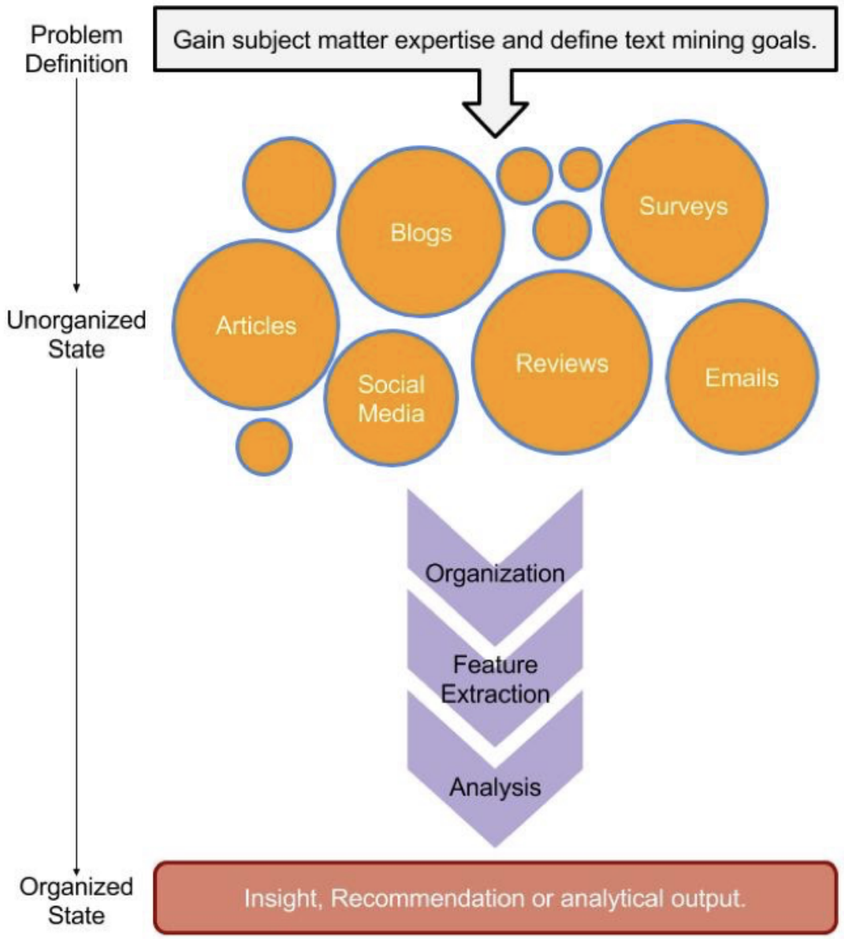
Remember the workflow?



1 - Problem definition & specific goals

2 - Identify text to be collected

3 - Text organization

4 - Feature extraction

5 - Analysis

6 - Reach an insight, recommendation, or output

A case study in HR analytics

1. **Problem definition**
2. **Unorganized state**
3. Organization
4. Feature Extraction
5. Analysis
6. **Organized state** *Insight, recommendation, analytical output*

A case study in HR analytics

1. Problem definition

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1. **Problem definition** — *Which company has better work life balance? Which has better perceived pay according to online reviews?*
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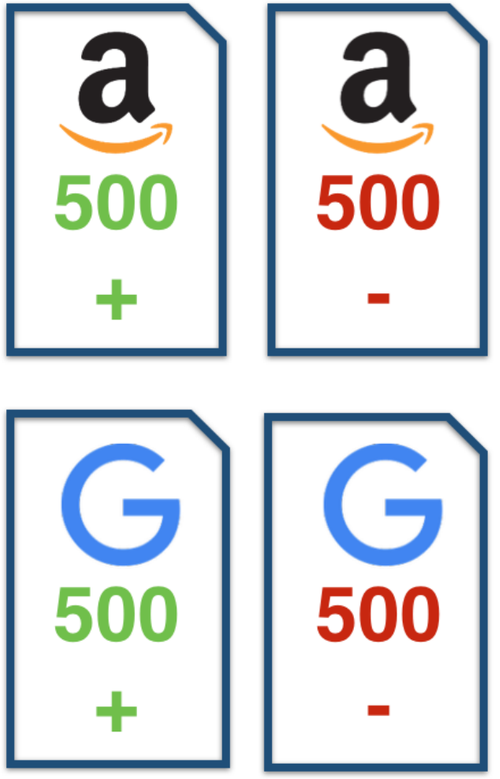

6. **Organized state** — *Insight, recommendation, analytical output*

Let's practice!

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Step 3: Text organization

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Text organization with qdap

```
# qdap cleaning function
qdap_clean <- function(x) {
  x <- replace_abbreviation(x)
  x <- replace_contraction(x)
  x <- replace_number(x)
  x <- replace_ordinal(x)
  x <- replace_symbol(x)
  x <- tolower(x)
  return(x)
}
```

Text organization with tm

```
# tm cleaning function
tm_clean <- function(corpus) {
  tm_clean <- tm_map(corpus, removePunctuation)
  corpus <- tm_map(corpus, stripWhitespace)
  corpus <- tm_map(corpus, removeWords,
                   c(stopwords("en"), "Google", "Amazon", "company"))
  return(corpus)
}
```

Cleaning your corpora

Let's practice!

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Steps 4 & 5: Feature extraction & analysis

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Feature extraction

```
# Create bigram TDM
amzn_p_tdm <- TermDocumentMatrix(
  amzn_pros_corp,
   control = list(tokenize = tokenizer)
)
```

	Review 1	Review 2	...	Review N
Bigram 1	0	0	0	0
Bigram 2	1	1	0	0
Bigram 3	1	0	0	0
...	0	0	1	1
Bigram M	0	0	1	0

Term Document Matrix (TDM)

Get term frequencies

```
# Convert TDM to matrix
amzn_p_m <- as.matrix(amzn_p_tdm)
# Compute term frequencies
amzn_p_freq <- rowSums(amzn_p_m)
# Sort in decreasing order of frequency
term_frequency <- sort(amzn_p_freq, decreasing = TRUE)
# View the top 5 most frequent bigrams
term_frequency[1:5]
```

```
      good pay great benefits   smart people
            25              24             20
    place work     fast paced
            17              16
```

Create visuals with plotrix

```
# Find common words
common_words <- subset(all_tdm_m, all_tdm_m[, 1] > 0 & all_tdm_m[, 2] > 0)
difference <- abs(common_words[, 1] - common_words[, 2])
common_words <- cbind(common_words, difference)
common_words <- common_words[order(common_words[, 3], decreasing = TRUE), ]
# Create data frame: top 15 words
top15_df <- data.frame(x = common_words[1:15, 1], y = common_words[1:15, 2],
                       labels = rownames(common_words[1:15, ]))
# Make pyramid plot
pyramid.plot(top15_df$x, top15_df$y, labels = top15_df$labels, gap = 12,
             main = "Words in Common", unit = NULL,
             top.labels = c("Amzn", "Cons Words", "Google"))
```

Let's practice!

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Step 6: Reach a conclusion

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Time to reach a conclusion!

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Let's practice!

TEXT MINING WITH BAG-OF-WORDS IN R

Finished!

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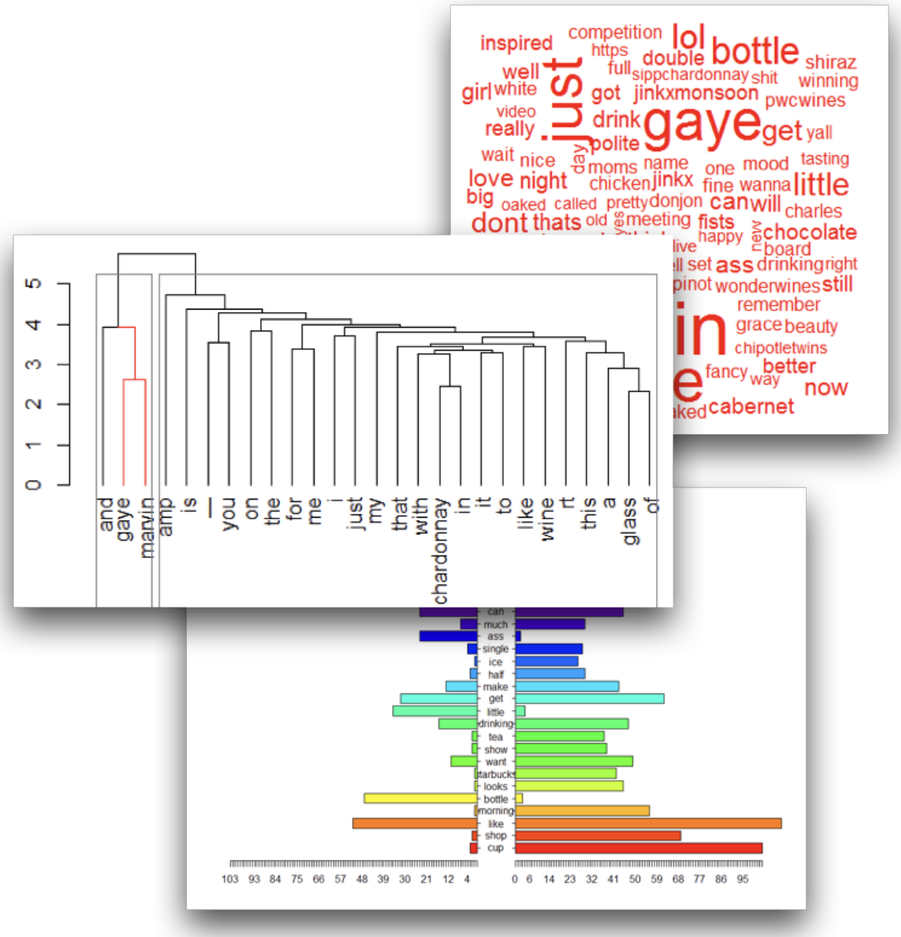
In this course, you learned how to...

- Organize and clean text data
- Tokenize into unigrams & bigrams
- Build TDMs & DTMs
- Extract features
  - Top terms
  - Word associations
- Visualize text data



Congratulations!

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