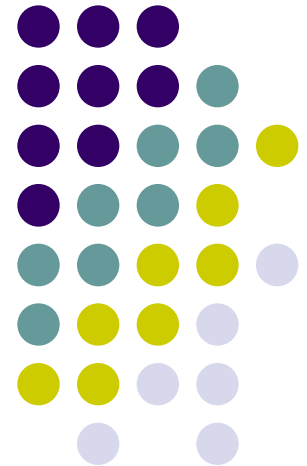


# ***Applied Scaling & Classification Techniques in Political Science***

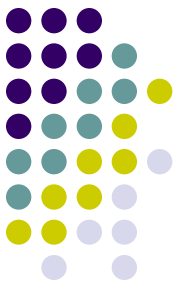
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Lab 6

Dictionaries and Supervised  
classification methods



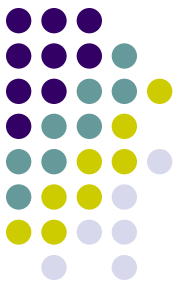
# Difference between procedures



When you want to do a text classification (with a training-set and a test-set), the procedures are different when you want to use a random forest/support vector machine algorithm vs. a naive bayes algorithm

- *When you want to use the former, those are your steps:*
  1. *You create a unique corpus of the texts including both the training-set and the test-set corpus*
  2. *You create a unique DFM*
  3. *You transform such unique DFM into a unique data frame and you add to such data frame the column of the «sentiment» originally included in the unique corpus*
  4. *You split the unique data frame in 2 (one for the training-set and one for the test-set) according to the presence or absence of «sentiment» information in the unique data frame*
  5. *You run the analysis*

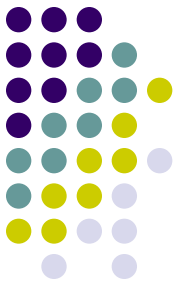
# Difference between procedures



When you want to do a text classification (with a training-set and a test-set), the procedures are different when you want to use a random forest/support vector machine algorithm vs. a naive bayes algorithm

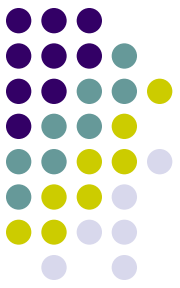
- *When you want to use the latter, those are your steps:*
  1. *You start with two different corpus of texts (one for the training-set and one for the test-set)*
  2. *You create two separated DFM*
  3. *Naive Bayes can only take features into consideration that occur both in the training set and the test set, so we have to make the features identical!*
  4. *You run the analysis*

# Difference between procedures



Why this difference? Because the Naive Bayes algorithm based on a multinomial distribution (i.e., the suggested algorithm when dealing with texts) is implemented at the moment only within Quanteda!

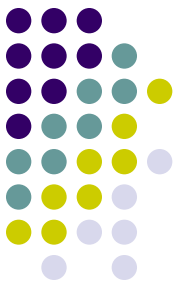
# Difference between procedures



When you want to run a k-fold cross-validation on your training-set, the procedures are different when you want to use a random forest/support vector machine algorithm vs. a naive bayes algorithm

- *When you want to use the former, those are your steps:*
  1. *You start with the data-frame that you got at point 4 above related only to the training-set*
  2. *You randomly split it according to the value of K you want ( $K=2, 5, 10$ ) by creating different data-frames (i.e., data-frames both including  $K_i$  (if  $K=3$ ,  $i$  runs from 1 to 3), as well as data-frames NOT including  $K_i$ )*
  3. *You run cross-validation analysis*

# Difference between procedures



When you want to run a k-fold cross-validation on your training-set, the procedures are different when you want to use a random forest/support vector machine algorithm vs. a naive bayes algorithm

- *When you want to use the latter, those are your steps:*
  1. *You start with the corpus including only the training-set*
  2. *You randomly split it according to the value of K you want (K=2, 5, 10)*
  3. *You create a DFM for both the corpus including  $K_i$  (if  $K=3$ ,  $i$  runs from 1 to 3), and the corpus NOT including  $K_i$*
  4. *You run cross-validation analysis*

# Difference between procedures



There are also some packages in R that allow you to run the cross-validation procedure in just one line of command (such as *Caret*), but better first learning what you have to do step-by-step!