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HA NOI UNIVERSITY OF SCIENCE AND TECHNOLOGY
SCHOOL OF INFORMATION AND COMMUNICATION TECHNOLOGY

Chapter 9
Big data analytics

Spark ML

Machine Learning Library (MLlib)

- 2 packages
  - spark.mllib
  - spark.ml
- ML algorithms
  - Common learning algorithms such as classification, regression, clustering and collaborative filtering
- Featurization
  - Feature extraction, transformations, dimensionality reduction and selection
- Utilities
  - Linear algebra, statistics, data handling, …

ML: Transformer

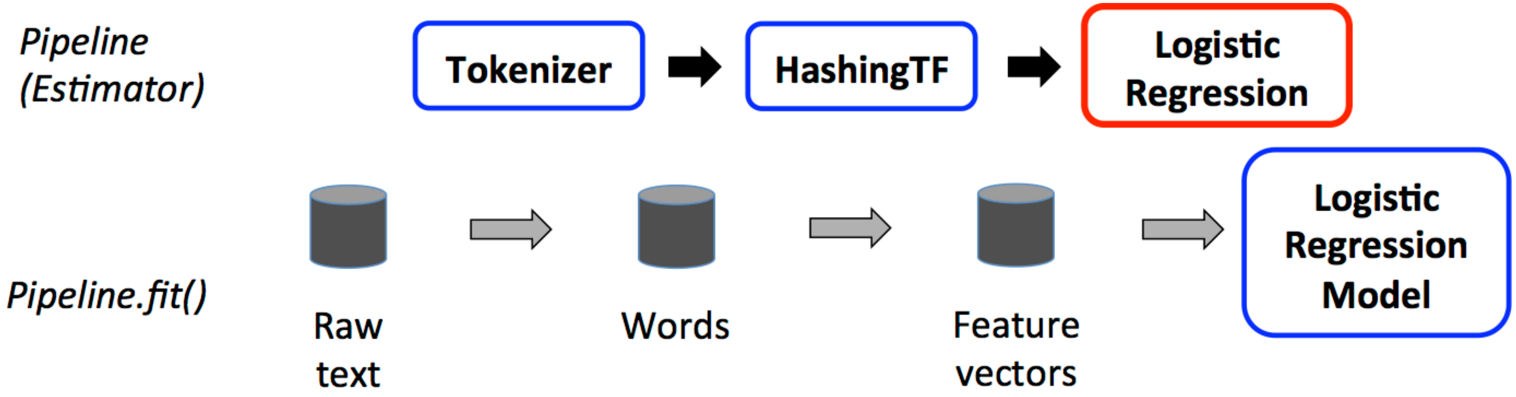
- A Transformer is a class which can transform a DataFrame into another DataFrame
- A Transformer implements transform()
- Examples
  - HashisngTF
  - LogisticRegressionModel
  - Binarizer

ML: Estimator

- An Estimator is a class which can take a DataFrame and return a Transformer
- An Estimator implements fit()
- Examples
  - LogisticRegression
  - StandardScaler
  - Pipeline

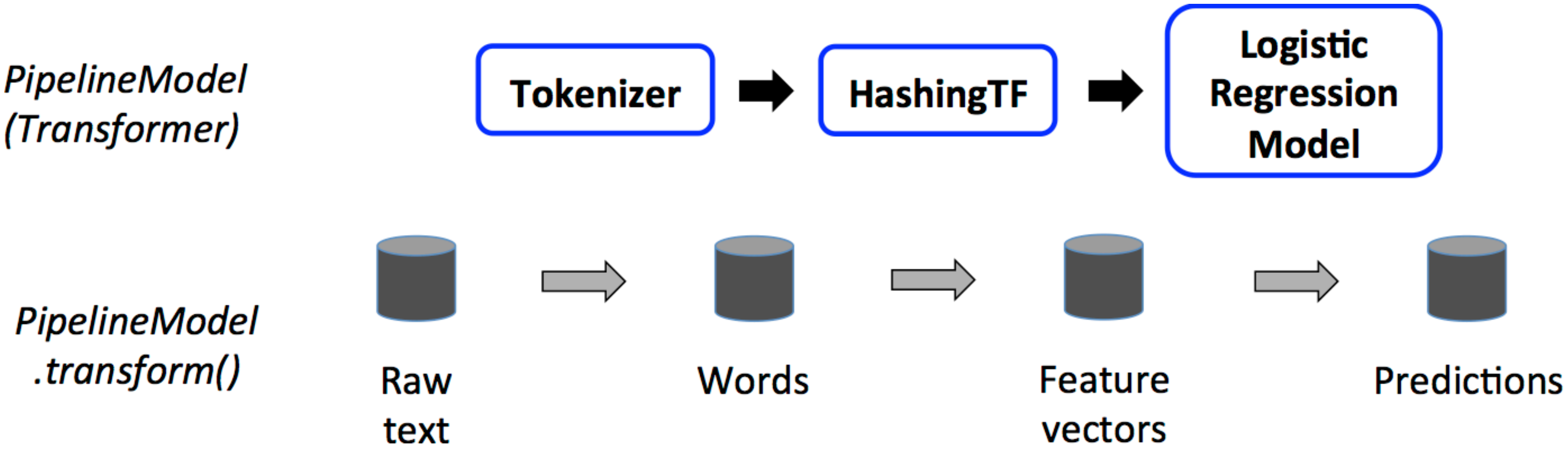
ML: Pipeline

- A Pipeline is an estimator that specified as a sequence of stages and each stage can be either estimators or transformers.



ML: PipelineModel

- After a Pipeline.fit() runs, it produces a PipelineModel. This PipelineModel is used at test time.



PipelineModel (Transformer)
Tokenizer
HashingTF
Logistic Regression Model
PipelineModel .transform()
Raw text
Words
Feature vectors
Predictions

Demo

References

- Meng, Xiangrui, et al. "Mllib: Machine learning in apache spark." *The Journal of Machine Learning Research* 17.1 (2016): 1235-1241.
- Pentreath, Nick. *Machine learning with spark*. Packt Publishing Ltd, 2015.

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